



PROJECT IDENTIFICATION FORM (PIF).

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

For more information about GEF, visit TheGEF.org

PART I: PROJECT INFORMATION

Project Title:	Market Transformation for Sustainable Rural Housing in Uzbekistan		
Country(ies):	Uzbekistan	GEF Project ID: ¹	6913
GEF Agency(ies):	UNDP	GEF Agency Project ID:	5392
Other Executing Partner(s):	State Committee on Architecture and Construction of the Republic of Uzbekistan (Gosarchitectstroy)	Submission Date:	07/30/2014
		Re-submission Date:	03/03/2015
GEF Focal Area(s):	Climate Change	Project Duration (Months)	60
Integrated Approach Pilot	IAP-Cities <input type="checkbox"/> IAP-Commodities <input type="checkbox"/> IAP-Food Security <input type="checkbox"/>	Corporate Program: SGP	<input type="checkbox"/>
Name of parent program:	[if applicable]	Agency Fee (\$)	570,000

A. INDICATIVE FOCAL AREA STRATEGY FRAMEWORK AND OTHER PROGRAM STRATEGIES²:

Objectives/Programs (Focal Areas, Integrated Approach Pilot, Corporate Programs)	Trust Fund	(in \$)	
		GEF Project Financing	Co-financing
CCM-1 Program 2	GEFTF	6,000,000	108,000,000
Total Project Cost		6,000,000	108,000,000

B. INDICATIVE PROJECT DESCRIPTION SUMMARY

Project Objective: To provide Uzbekistan's rural population with improved, affordable and environmentally-friendly living conditions.					
Project Component	Financing Type ³	Project Outcomes	Trust Fund	(in \$)	
				GEF Project Financing	Co-financing
1. Green mortgage market mechanism to scale-up demand for low-carbon housing	INV	Green mortgage scheme is in place and provides incentives to home owners to invest in houses that feature low-carbon design and technologies	GEFTF	3,000,000	89,000,000
	TA	Financial institutions have capacity to design and operate dedicated financial products for low-carbon housing	GEFTF	500,000	500,000
2. Construction and domestic supply chain for low-carbon housing and settlements	INV	Prototype EE and low-carbon designs for rural houses and settlements prepared and demonstrated	GEFTF	600,000	12,000,000
	TA	Domestic supply chain and capacities for design and construction of low-carbon housing strengthened	GEFTF	600,000	1,000,000
3. Policy and regulatory reform to enable the scale-up of low-carbon housing and settlements	TA	Appropriate policy and regulations, such as minimum-energy performance standards (MEPS), are in place to enable scaled-up construction of low-carbon housing and settlements Capacity of Gosarchitectstroy and its territorial divisions to appraise standard EE/low-carbon home design under the	GEFTF	500,000	4,500,000

¹ Project ID number will be assigned by GEFSEC and to be entered by Agency in subsequent document submissions.

² When completing Table A, refer to the GEF Website, [Focal Area Results Framework](#) which is an Excerpt from [GEF-6 Programming Directions](#).

³ Financing type can be either investment or technical assistance.

		green mortgage scheme and ensure compliance with new building codes and MEPS strengthened. Land-use plans and zoning regulations improved to maximize efficient resource use and incorporate climate considerations.			
4. Marketing and promotion of low-carbon rural housing and settlements	TA	Increased public awareness about the benefits and advantages of low-carbon housing and growing demand for low-carbon housing among home buyers National and sub-national stakeholders are aware of and able to incorporate climate considerations into decision-making	GEFTF	520,000	400,000
Subtotal				5,720,000	107,400,000
Project Management Cost (PMC) ⁴			GEFTF	280,000	600,000
Total Project Cost				6,000,000	108,000,000

C. INDICATIVE SOURCES OF CO-FINANCING FOR THE PROJECT BY NAME AND BY TYPE, IF AVAILABLE

Please include confirmed co-financing letters for the project with this form.

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount (\$)
Recipient Government	Ministry of Finance	In-kind	250,000
Recipient Government	Gosarchitectstroy	Grants	2,500,000
Recipient Government	Gosarchitectstroy	In-kind	550,000
Recipient Government	Ministry of Economy	In-kind	1,450,000
Recipient Government	Kishlok Kurilish Loikha (Rural Development Agency)	Grants	12,000,000
GEF Agency	UNDP	Grants	1,250,000
Private Sector	Kishlok Kurilish Bank (Rural Development Bank) and its subsidiaries	Loans	89,000,000
		In-kind	300,000
Private Sector	Ipoteka Bank	Loans	200,000
Other	Association of producers of renewable energy technologies	In-kind	250,000
Other	Chamber of Commerce and Industry of Uzbekistan	In-kind	150,000
Other	Institute of Energy and Automation	In-kind	50,000
Other	Energy Centre of Uzbekistan	In-kind	50,000
Total Co-financing			108,000,000

D. INDICATIVE TRUST FUND RESOURCES REQUESTED BY AGENCY(IES), COUNTRY(IES) AND THE PROGRAMMING OF FUNDS ^{a)}

N/a

E. PROJECT PREPARATION GRANT (PPG)⁵

⁴ For GEF Project Financing up to \$2 million, PMC could be up to 10% of the subtotal; above \$2 million, PMC could be up to 5% of the subtotal. PMC should be charged proportionately to focal areas based on focal area project financing amount in Table D below.

⁵ PPG requested amount is determined by the size of the GEF Project Financing (PF) as follows: Up to \$50k for PF up to \$1 mil; \$100k for PF up to \$3 mil; \$150k for PF up to \$6 mil; \$200k for PF up to \$10 mil; and \$300k for PF above \$10m. On an exceptional basis, PPG amount may differ upon detailed discussion and justification with the GEFSEC.

Is Project Preparation Grant requested? Yes No If no, skip item E.

PPG AMOUNT REQUESTED BY AGENCY(IES), TRUST FUND, COUNTRY(IES) AND THE PROGRAMMING OF FUNDS

Project Preparation Grant amount requested: \$100,000					PPG Agency Fee: \$9,500		
GEF Agency	Trust Fund	Country/ Regional/Global	Focal Area	Programming of Funds	(in \$)		
					PPG (a)	Agency Fee ⁶ (b)	Total c = a + b
UNDP	GEF TF	Uzbekistan <input type="checkbox"/>	Climate Change	(select as applicable)	100,000	9,500	109,500
Total PPG Amount					100,000	9,500	109,500

⁶ PPG fee percentage follows the percentage of the Agency fee over the GEF Project Financing amount requested.

F. PROJECT'S TARGET CONTRIBUTIONS TO GLOBAL ENVIRONMENTAL BENEFITS⁷

Provide the expected project targets as appropriate.

Corporate Results	Replenishment Targets	Project Targets
4. Support to transformational shifts towards a low-emission and resilient development path	750 million tons of CO _{2e} mitigated (include both direct and indirect)	3,498,000 tCO ₂

PART II: PROJECT JUSTIFICATION

1. Project Description. Briefly describe: 1) the global environmental problems, root causes and barriers that need to be addressed; 2) the baseline scenario or any associated baseline projects, 3) the proposed alternative scenario, with a brief description of expected outcomes and components of the project, 4) incremental/additional cost reasoning and expected contributions from the baseline, the GEFTF, LDCE, SCCF, and co-financing; 5) global environmental benefits (GEFTF) and/or adaptation benefits (LDCE/SCCF); and 6) innovativeness, sustainability and potential for scaling up.

⁷ Provide those indicator values in this table to the extent applicable to your proposed project. Progress in programming against these targets for the projects per the *Corporate Results Framework* in the [GEF-6 Programming Directions](#), will be aggregated and reported during mid-term and at the conclusion of the replenishment period.

1.1 Global Environmental Problems, Root Causes and Barriers

According to UN estimates, the population of Uzbekistan will increase by more than 20 percent over the next 15 years. Approximately 16.8 million people, or about half of the country's population, lives in rural areas. Of these 3.4 million households (with an average household size of 5), approximately 1.5 million families are in need of improved living conditions.⁸

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)⁹ 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.

New Rural Settlements

In response to pressing demographic challenges (the population is projected to grow at a rate of 2.7% annually) and needs in rural areas, the Government of Uzbekistan under its "Housing for Comprehensive Rural Development" program is making significant investments in new rural and peri-urban settlements. In the period 2009-2014, over 2.5 bln US\$ in total has been invested by the Government in construction of over 1,000 new rural settlements, including 44,600 individual houses based on standard design, and incorporating several thousand other facilities (schools, hospitals, public buildings), and over 730 km of roads and utilities network¹⁰ (See Picture 1).

Picture 1: New Rural Settlements in Uzbekistan¹¹



⁸ Institute of Social Studies in Uzbekistan, 2014.

⁹ Source: UNDP Uzbekistan 2014 "Energy efficiency in Buildings: Untapped Reserves for Uzbekistan Sustainable Development."

¹⁰ Source: State Committee For Architecture and Construction

¹¹ Houses are built on site based on standard design for 3, 4 and 5 bedroom houses

Source: www.gazeta.uz

The Government is planning to further increase investment in new rural housing and infrastructure and has set up the following targets to be achieved by 2020: 2,500 new settlements, 87,000 new houses, 1,400 new social facilities (schools/hospitals), 2,000 km of gas supply pipeline, 1,700 km of car roads and 2,000 km of water supply networks. (See Table 1 below on housing)

Table 1: Government Targets for Housing Construction in Rural Areas 2015-2020.

	2015	2016	2017	2018	2019	2020
Rural houses to be built under programme	12,000	13,000	14,000	15,000	16,000	17,000

Source: State Committee For Architecture and Construction

Financing for Rural Housing- Rapid Growth in Mortgage Markets

The launch in 2009 of the State Program “Housing for sustainable rural development,” and the signature of the Presidential Decree “On Additional Measures for Scaling-up Housing Construction in Rural Areas” (2009) boosted real-estate market and demand for rural housing, which has since then grown exponentially: from about 25.4 mln US\$ in 2009 to 886.3 mln US\$ in 2014 (see Table 2). In this period, more than 44,000 houses (over 6.5 million m²) were sold in rural areas across Uzbekistan.

This explosive growth in rural housing has been underpinned by an accompanying rapidly growing mortgage market. All houses under the programme are transferred to home owners (100% private ownership), with homeowners purchasing the home via preferential mortgages offered through Kishlok Kurilish Bank (Rural Construction Bank), and—from 2013—National Bank and Ipoteka Bank (Mortgage Bank). Mortgages for standard rural houses are offered at a fixed interest rate of 7% for a 15 year period. Homeowners pay approximately 40% of the cost of the home as a downpayment, with 60% of the home’s value being covered by the mortgage. (see Table 2)

Table 2: Construction and financing of new rural houses under State Program “Housing for Comprehensive Rural Development” (2009-2014)

		2009	2010	2011	2012	2013	2014
Rural houses built under programme		874	6,800	7,400	8,510	10,000	11,000
Total cost of rural houses	USD m	25.4	214.5	288.3	453.0	692.7	886.3
Financing							
Total mortgages. Financed from:	USD m	15.7	127.3	182.5	266.0	398.0	528.6
ADB loan	USD m	-	-	-	171.2	125.3	123.5
Government budget funds	USD m	15.7	127.0	160.5	65.3	231.4	353.4
Kishlok, Ipoteka banks.	USD m	-	0.3	22.0	29.5	41.3	51.8
Total financing by homeowners	USD m	9.7	87.2	105.8	187.1	294.6	357.7

Source: State Committee For Architecture and Construction

To support these efforts, the Government of Uzbekistan signed a framework agreement with the Asian Development Bank (ADB) in 2011 that anticipated multi-tranche financing for housing construction in rural areas. The loan agreement for the first tranche was signed in 2012, an agreement for the second tranche was signed in 2013, and the government is currently in negotiations with ADB regarding a third tranche of lending. This third tranche would continue the financing program until 2020, involving the construction of up to 87,000 additional rural homes, approximately twice the number of homes that have been constructed in the previous six years. In addition, the Government a loan agreement in the rural housing sector with the Islamic Development Bank in November 2014 valued at USD 100 million.

Monitoring Rural Housing Construction

The “Housing for sustainable rural development” program is a state-funded program which follows modalities and procedures for construction and appraisal, which are in place in Uzbekistan to ensure proper use of public funds. These modalities and procedures are the following:

1) Each provincial municipality establishes a company entitled “Engineering Company on Service of Single Customer”. This company is responsible for implementation of all state-funded programs in a particular province, including construction of rural houses. Specifically, it is responsible for:

- organization of construction, including tender-based selection of construction companies;
- monitoring of construction;
- control of funds spending by the selected construction company(ies).

2) Gosarchitectstroy is the governmental agency in charge of enforcement and monitoring compliance of construction works with mandatory building standards and norms, including the energy efficiency requirements. At building design stage, Gosarchitectstroy reviews the design of the building and certifies its compliance with all mandatory norms. Afterthat, through its territorial divisions Gosarchitectstroy undertakes regular monitoring of construction works (for compliance with approved design) and, finally, issue the closing building permit during commissioning stage certifying compliance of the building with mandatory norms and approved design. If the building does not comply with design and norms, the permit can't be issued.

Domestic Supply Chain for Rural Housing Construction

Domestic supply chain for construction industry in Uzbekistan is quite developed and is constantly growing. In 2009-2013 over 1020 new local enterprises have been established and 839 existing companies upgraded their production base. They include those focusing on manufacturing energy efficient materials/equipment such as ceramic bricks, foam-concrete and basalt wool insulation, double/triple-glazed plastic windows and doors, gypsum-pasteboard, sandwich-panels, energy efficient boilers and stoves, etc¹². The national database of energy efficient materials and technologies has been established in 2012 and is being updated annually by the State Committee for Architecture and Construction (Gosarchitectstroy). The database covers (as of 2014) over 50 national enterprises specializing in energy efficient materials/equipment. In addition, there are about 30 local companies which are engaged in manufacturing, assembling, installation and after-sale servicing of renewable equipment/systems¹³. Apart from domestic companies, there are a number of joint ventures have recently been established in the sector engaged in manufacturing technical silicon (total capacity of 17,000 tons per year), assembling PV panels (50 MW) in Navoi province and solar water heating collectors (50 thousand units per annum), as well as energy-efficient LED lamps in Jizzak province¹⁴.

Global Environmental Problem to be addressed

New housing and settlements have been prioritized by the Government of Uzbekistan in this project because residential sector is already responsible for half of all energy-related GHG emissions (approximately 80 million tCO₂e annually) and is the largest energy consuming sector in the country. However, with projected growth of new construction, residential energy consumption will rise by over 30% by 2050, posing a threat to national energy security and global GHG emissions (see Table 1 below). In order to meet additional residential fuel and energy demand, which is 66% of 2011 net gas export, natural gas consumption will have to go up by 7.6 bln. m³. In other words, in the baseline scenario, growing gas demand cuts natural gas export potential by two thirds, thus reducing new technology import possibilities, stability of Uzbek national currency and sustainability of economic growth rates. Residential energy demand growth in the baseline scenario is primarily determined by space heating needs of increasing housing stock (Table 3).

¹² Institute of Social Studies under the Ministry of Economy of the Republic of Uzbekistan

¹³ State Committee for Architecture and Construction of the Republic of Uzbekistan

¹⁴ Ministry of Economy of the Republic of Uzbekistan

Table 3: Baseline Residential Energy Use, 2010-2050, in thousand tce

	2010	2020	2030	2040	2050
By energy resources					
Coal	21	19	18	17	16
Oil products	27	30	30	29	28
Natural gas	16491	19121	19957	20680	21161
Renewables	101	128	139	145	148
Other solid fuels	516	499	490	463	427
Electricity	951	1172	1430	1775	2131
<i>same, mln. kWh</i>	<i>7731</i>	<i>9525</i>	<i>11626</i>	<i>14427</i>	<i>17326</i>
Heat	1785	1986	2046	2108	2157
Total	19893	22955	24109	25217	26069
By processes					
Space heating	12975	15077	15780	16614	17345
DHW	3891	4425	4643	4687	4601
Cooking	2196	2408	2374	2264	2114
Appliances	830	1045	1312	1652	2009

Source: UNDP 2014. Energy Efficiency in Buildings: Untapped Reserves for Uzbekistan Sustainable Development

Energy & Other Resource Use in Rural Housing and Settlements

A root cause of this high energy consumption is related to land use planning and construction practices. Traditionally, Uzbek villages were built on an *ad hoc* basis using traditional materials such as unfired clay bricks. Rural houses in the past did not use standard designs, and most were built without blueprints. Since the start of the national program “Housing for Comprehensive Rural Development,” standard designs and land-use planning procedures have been introduced and applied in all new settlements. However, the characteristics of standard house design fall short of the existing potential for energy savings and GHG emission reduction: as shown in Table 4, up to 60% additional savings can be achieved cost-effectively in new houses if additional energy efficiency and renewable energy measures are introduced. In addition, land-use plans for new areas do not take low-carbon considerations in the account thus missing an opportunity to realize even larger efficiency gains from applying passive solar design techniques and take full advantage of the local climate.

Table 4: New Rural Houses in Uzbekistan—Standard vs. Potential Performance

Type of Housing	Annual Energy Consumption (kWh/m ² /yr)	Energy/GHG Savings Compared to Standard (%)	Cost of Home (USD) ¹¹	Cost Differential Compared to Standard (%) ¹⁵
New Standard Home (existing design)	224	--	\$70,000	--
Energy-Efficient Home (extra insulation)	118	47%	\$73,500	5%
Low-Carbon (EE +RE) Home ¹⁶	96	57%	\$77,000	10%

¹⁵ These are preliminary estimates. The actual cost differential will vary depending on the type of a house, i.e. whether it has two, three or four-bedrooms.

¹⁶ The low-carbon house includes the following technologies: extra insulation, a solar hot water heater with heat exchanger, PV system for lighting, LED lamps, and a recuperative air exchanger.

Source: UNDP 2014. Energy Efficiency in Buildings: Untapped Reserves for Uzbekistan Sustainable Development

The main policy tool adopted by the Government of Uzbekistan to reduce GHG emissions in the buildings sector has been the introduction and gradual strengthening of Energy Performance Building Codes. Beginning with UNDP-GEF support in 2009, nine building codes regulating the thermal performance of various building elements (roofs, heating, ventilation) were revised, and energy efficiency requirements were strengthened, ensuring reductions in energy consumption levels of 25% to 50% depending on the type of building. All revised codes were approved and entered into force in June 2011. Consequently, standard designs of rural houses were adjusted in 2011 to comply with new requirements. However, research conducted by UNDP has indicated that more ambitious requirements could be introduced in the rural housing sector that would be 40% stricter than existing norms. Energy consumption in typical rural houses could be reduced by an additional 106-128 kWh/m²/yr (or by up to 50%!) with only 5-10% increase of construction costs (See Table 4).

There is a further opportunity to shift to low-carbon rural housing (*i.e. housing which takes full advantage of existing energy saving potential but also incorporates renewable energy systems*), as opposed to housing that is merely more energy efficient, due to the urgent need to address energy reliability issues and further reduce the carbon footprint of the sector. While renewable energy has both local and global environmental benefits, it is also an important means of improving energy security in rural areas, as it reduces demand for fuel. However, it is not currently addressed in building codes for rural housing and its application in Uzbekistan, especially in rural areas, remain extremely rare.

However, affordability is the principal barrier hindering demand for low-carbon houses: increases in upfront costs and monthly mortgage payments can act as a disincentive and be difficult for rural households to afford. Therefore, additional support is required to transform the real-estate market towards low-carbon housing and achieve substantial energy savings and GHG emission reductions within the “Housing for Comprehensive Rural Development Program”.

Barriers to Sustainable Rural Housing & Settlements

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

Type of Barrier	Description of Barrier	Proposed Project Response
<i>Financial</i>	<ul style="list-style-type: none"> *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 	<ul style="list-style-type: none"> *Work with financial institutes involved in existing mortgage programs to create a non-grant mechanism that will incentivize purchases of low-carbon houses and leverage the money currently spent by the government for housing construction (Component 1)
<i>Market-related</i>	<ul style="list-style-type: none"> *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 	<ul style="list-style-type: none"> *Provide technology needs assessment, market studies, and supply chain support (Component 2) *Demonstrate technologies in the low-carbon rural houses (Component 2)

	technologies and approaches, as those technologies are primarily imports and may not be known to potential customers	
<i>Policies and regulations</i>	<p>*Minimum energy performance standards (MESPs) for rural housing do not reflect full technical and market potential and are not systematically enforced by the authorities</p> <p>*Lack of policies and regulations enabling low-carbon land-use planning</p>	<p>*Introduce new, more stringent MEPS for rural housing and strengthen enforcement capacities of relevant bodies (component 3)</p> <p>*Introduce new policies and regulations promoting low-carbon land-use planning and (Component 3)</p>

1.2 Project Baseline and Associated Baseline Projects

As discussed in Section A.1.1, Uzbekistan is currently undertaking large-scale State Investment Program “Housing for Comprehensive Rural Development” which envisages construction of over -87,000 houses and rural infrastructure by 2020 worth over 6 bln US\$ provided by the Government, ADB and IsDB. Also, under baseline, three Uzbek Banks, Kishlok Kurilish Bank (Rural Construction Bank), National Bank and Ipoteka Bank (Mortgage Bank) will continue running their mortgage programs providing preferential loans for rural residents for purchase of new homes.

In 2012, building on the success of the UNDP/GEF project in promoting energy efficiency in public buildings,¹⁷ particularly the construction/retrofitting of eight demonstration public buildings and adoption of new building codes, Gosarchitectstroy and the Ministry of Economy of the Republic of Uzbekistan asked the project team to consider energy efficiency in rural housing. In response, the project team analyzed and revised the three existing standard designs for rural houses (3-, 4- and 5-bedroom designs) to increase their energy efficiency. Using these designs, the project piloted the construction of a new “green” rural home in partnership with the national organizations involved in the rural housing program.

In the area of project development, the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), will support the participation of the Government of Uzbekistan in the Green Climate Fund Readiness Programme. That program will include areas such as developing strategic frameworks (including country programs) and developing an initial pipeline of proposals and projects.

In a related area, the UNDP/Adaptation Fund project “Developing climate resilience of farming communities in the drought prone parts of Uzbekistan” is supporting a number of climate adaptation measures in rural communities in drought-prone parts of Uzbekistan, including the creation and strengthening of knowledge/excellence centers on technologies and practices that save resources and are ecologically friendly. These baseline activities will be complemented by education and awareness-raising activities on sustainable rural housing and living.

1.3 Proposed Alternative Scenario

Approach: The proposed GEF 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. The use of GEF funds for the green mortgage mechanism will leverage substantial government and private investments in the housing sector and develop an innovative product that can be replicated broadly in

¹⁷ From mid-2013 to mid-2014, 892 public buildings (including schools and hospitals) were constructed using the more stringent energy codes developed by the UNDP/GEF project.

Uzbekistan by the Government and other sources of funding, such as the Green Climate Fund.

Rural housing provides an entry point into low-carbon and climate resilient rural development that is unique. While the housing units themselves can be constructed as energy efficient and low-carbon buildings that utilize energy efficiency and renewable energy technologies, the construction of entire housing developments also presents an opportunity to address climate threats, such as increasing air temperature, changing rainfall patterns (and increased drought frequency), and an increase in extreme events, e.g. heat waves.¹⁸ 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. Furthermore, housing improvements in resource efficiency could reduce energy and water use, easing the acute stress on diminishing water resources and reducing utility expenditures for households--both steps that would also reduce vulnerability to climate change.

Objective: The objective of the proposed project is to improve rural livelihoods in Uzbekistan by promoting the real estate market transformation towards affordable, sustainable and low-carbon rural housing. The total project size is estimated at \$108 million, with a proposed GEF/CCM contribution of \$6 million. The project design builds directly on previous and on-going experience with sustainable, low-carbon and climate-resilient local development in Uzbekistan.

Strategy: The proposed project consists of four inter-linked outcomes. The first and principal outcome is the establishment of the green mortgage scheme to incentivize and eventually scale-up the demand for low-carbon housing. This outcome will be supported and enabled by three complementary outcomes related to strengthening domestic supply chain and capacities for construction of low-carbon housing (outcome 2), introducing policies and regulations for low-carbon housing and settlements (outcome 3) and raising public awareness about benefits and advantages of low-carbon housing (outcome 4).

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

Under this component, the project will work with national financial institutions, primarily Kishlok Kurilish Bank (Rural Construction Bank), to design, capitalize, and operationalize a green mortgage financial mechanism to incentivize the demand for more energy efficient (EE) and low-carbon houses.

The green mortgage scheme will build on and complement existing and highly popular mortgage program 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.

Incentives will be offered to stimulate the demand for two categories of green housing: first, energy efficient (EE) houses (featuring most cost-effective EE solutions, such as better building insulation, with an incremental increase in baseline cost of up to 5%); second, low-carbon houses (featuring both EE and renewable energy solutions and a higher incremental increase in baseline cost of up to 10%). The design for both EE and low-carbon houses will be prepared and tested under Component 2.

The purpose of the scheme will be to make mortgage conditions for EE and low-carbon houses as attractive to the borrowers as the ones currently in place for standard houses. The scheme will subsidize the interest payments for a green mortgage to bring them to the same level as those for a standard mortgage. UNDP’s initial estimates of the offering to homeowners are shown in Table 6, with three key products offered: a standard house mortgage (\$70,000 home value, 7% interest rate), an “EE Home” green mortgage (\$73,500 home value, 6.7% interest rate) and a “Low-Carbon Home” green mortgage (\$77,000 home value, 6.4% interest rate). The progressively lower interest rate will act as an incentive for home owners to select the most green improvements in their homes. While homeowner will benefit from lower interest rates, they will still pay the additional principal payments related to the larger green

¹⁸ Source: UNDP-GEF 2014.

mortgages - however, on a monthly basis, the larger principal payments are likely to be offset by lower energy costs. If, a further incentive is required, the scheme can also include subsidized principal payments, or extend the maturities of the green mortgages, in both cases further lowering the required monthly payments. The design of the green mortgage products will be further explored at the PPG stage and finalized in project implementation, based on additional financial analyses, market research into client demand for particular products, and consultations with participating banks. Overall, the proposed design of the scheme follows the model of other successful green mortgage mechanisms, including Mexico's 'Infonavit' green mortgage mechanism.

Table 6: Illustrative Green Mortgage Scheme for EE and Low Carbon Houses (USD)

	Standard Mortgage	'EE Home' Green Mortgage	'Low-Carbon Home' Green Mortgage
Home Value	\$ 70,000	\$ 73,500	\$ 77,000
Downpayment (40%)	\$ 28,000	\$ 29,400	\$ 30,800
Mortgage Size (60%)	\$ 42,000	\$ 44,100	\$ 46,200
Interest Rate	7.00%	6.70%	6.43%
Years	15	15	15
Monthly Principal & Interest	\$ 377.51	\$ 389.02	\$ 400.55
Characteristics of Green Mortgage			
Incremental Cost for Green Improvements		\$ 3,500	\$ 7,000
Extra Cost to Homeowner			
Incremental Downpayment		\$ 1,400	\$ 2,800
Incremental Monthly Payment (Principal)		\$ 11.51	\$ 23.04
Extra Cost to Government			
Subsidised Interest per Green Mortgage over 15 year Lifetime		\$ 1,298	\$ 2,596

Source: UNDP initial modelling

The appraisal of the EE and low-carbon houses will be undertaken as part of regular governmental procedures to oversee the implementation of the state rural housing program, whereby the State Committee for Architecture and Construction (Gosarchitectstroy) through its territorial divisions will monitor and report on construction works and issue closing building permit at the commissioning stage certifying compliance of each building with the EE or low-carbon design. This is the approach already taken for standard mortgages that have been provided by Kishlok Kurilish bank up to now under the state rural housing program. Given this involves new construction, the appraisal valuation of the homes is made using information provided by Gosarchitectstroy, typically taking a cost-basis approach (value of land and original construction materials) and reflecting the standard, publicly available pricing for homes under the state program. Only houses with appropriate closing permits issued by Gosarchitectstroy will be eligible for sales under Green Mortgage Scheme. As such, Gosarchitectstroy and its territorial divisions, will play a key appraisal role under the scheme and will receive the required training and assistance to continue to effectively undertake this function for EE and low carbon houses. (see Component 3).

UNDP has had initial conversations regarding the green mortgage scheme with Kishlok Kurilish and Ipoteca banks, as well as the relevant Uzbek ministries. All these actors have confirmed their positive interest in the scheme proceeding.

The first phase of the scheme will consist of an initial launch phase. With allocated 3 mln US\$ of GEF grant, it is estimated that this initial launch phase can cover up to 2,000 green mortgages (assuming 80%-20% split between EE and low-carbon types of houses). GEF funding under this output will be used to cover the incremental cost of the scheme as compared to regular cost of mortgages. The launch phase will be an opportunity to fine tune the precise mortgage offerings and marketing in order to best stimulate homeowner demand.

In addition, ongoing training and implementation support will be provided to participating financial institutions through TA sub-component. Training topics may include customer outreach/education and due diligence subject to the findings of preceding training needs assessment.

As shown in Table 7, the initial 2,000 house launch phase of the scheme will generate significant co-financing. It is estimated that the GEF's 3 miln US\$ will leverage a total of 148 miln US\$ of spending on green housing, composed of 59 miln US\$ in homeowner's down payments, and 89 miln US\$ of mortgages provided by banks (Kishlok, Ipoteca). As a conservative measure, only the mortgage co-financing has been recorded in Table B and C in this PIF.

Table 7: Estimated co-financing from 2,000 initial launch of green mortgage scheme (USD)

'EE Home' Green Mortgages (80% of Launch Scheme)			
	Homeowners downpayment		\$ 47,040,000
	Banks provision of mortgages		\$ 70,560,000
	Total		\$117,600,000
'Low Carbon Home' Green Mortgages (20% of Launch Scheme)			
	Homeowners downpayment		\$ 12,320,000
	Banks provision of mortgages		\$ 18,480,000
	Total		\$ 30,800,000
Total Co-financing from entire underlying mortgages			\$148,400,000

Source: UNDP initial modelling

The second phase of the scheme will consist of its national scale-up, with a target for the full mechanism to provide 20,000 green mortgages. Based on the results of the initial launch phase and market research, a detailed proposal will be elaborated for the full mechanism. In addition to its design and financing, this will include government outreach and awareness raising, communication with domestic and international banks, and development of supporting policies or regulations (such as new mandatory standards for rural housing or a regulatory decision from the Government to provide a pre-defined interest rate subsidy for mortgages for low-carbon rural houses).

It is anticipated that the cost of the full green mortgage scheme will fall over time. This will be due to lower costs for installing EE and low carbon materials in houses, as designs are optimized and benefits from economies of scale are realized. In addition, over time banks will obtain better data on the performance of EE and low carbon houses, lowering risks and in turn allowing for lower financing costs. It is possible that green mortgage homeowners may be more responsible and reliable borrowers, further reducing risk and financing costs.

With regard to funding the full scheme, initial conversations with the Government of Uzbekistan has indicated that they would be willing to fund 50% of the interest rate subsidy in the full mechanism, subject to matching donor funding for the remaining 50%. A promising opportunity may be to seek funding for the full green mortgage scheme from the Green Climate Fund (GCF). Should this arrangement be pursued, this could be an example of GEF funding the innovative launch phase, followed by GCF funding for further scale-up.

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

Component 2 is designed to facilitate implementation of financial market scheme in Component 1 by preparing and testing prototype designs for EE and low-carbon houses, strengthening 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.

In collaboration with Gosarchitectstroy and other national partners from the research community and the private sector, the project will support the identification and pilot testing of prototype designs. A standard EE rural house will feature most cost-effective EE solutions with incremental increase in baseline cost of up to maximum 5%. Standard design of EE Home will include the use of energy efficient construction materials and technologies to improve thermal performance of building envelop (external walls, windows, roof, ceiling and floor spaces). A standard low-carbon house will feature both EE and renewable energy solutions and will have higher increase in baseline costs, but up to max 10%. In addition to EE building materials, prototype design of Low-carbon Home will also focus on optimization of construction process to incorporate solar systems for hot water supply, solar PVs for lighting and reservation of power supply of pumps for heating needs, and heat recuperators. Since building process optimization feature a range of more expensive technologies they are only included in more advanced, Low-carbon Home design. Overall, solutions will be considered appropriate if they are environmentally, technically and economically feasible and acceptable; they will include technologies and measures to construct more energy efficient homes and the required infrastructure; renewable energy sources for autonomous power (e.g. various solar-based applications), heat and water supply; environmentally friendly solutions for sewage and sanitation; waste management and treatment techniques, etc.

The project will also support the identification and promotion of the materials, technologies, and techniques for low-carbon housing through the Rural Technology Needs Assessment. A technology needs assessment has only been conducted in Uzbekistan in 2001 and is now very 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.

Further, the project will support domestic manufacturers of technologies and materials identified to further promote their products and strengthen domestic manufacturing capacity and the existing marketing and distribution network. Finally, technical assistance will be provided to key industry stakeholders such as architects and builders to apply and integrate demonstrated solutions for day-to-day use in rural houses, including support for the design and demonstration of standardized/prototype rural energy efficient (EE) and low-carbon houses.¹⁹

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

This component will facilitate 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 design and introducing mandatory standards for EE and low-carbon construction, thus effectively creating sustained demand and client bases for green mortgages.

It will support the Government of Uzbekistan; 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.

Gosarchitectstroy is the key national agency and project implementing partner has received a mandate from the Government to prepare regular (every 5 years) revision of building codes. Next stage of code revision to be undertaken by Gosarchitectstroy will take place in 2017-2019 and will cover residential buildings. The project will work closely with Gosarchitectstroy and provide required technical assistance and support in order to ensure that scheduled revision of the codes include more stringent energy use requirements in line with EU Building Performance Directive.

¹⁹ A low-carbon home is understood as one that is not only energy efficient, but also incorporates other elements of sustainability such as sustainable materials, water use, and waste management. A formal definition to be applied to project implementation and monitoring will be finalized in the course of project preparation.

It will also focus on strengthening monitoring and enforcement systems to ensure compliance with EE/Low-carbon standards and new building codes to be introduced in 2017-2019. In particular it will support Gosarchitectstroy and its territorial divisions, to effectively undertake their appraisal function under the Green Mortgage Scheme, i.e. to monitor and report on compliance of the constructed houses with EE and Low-carbon standard design. Finally, the project will provide assistance under this component to test new approaches to spatial planning, i.e. incorporating principles of environmentally sustainable design, climate resilience and resource efficiency. The following specific outputs are envisioned:

a) Minimum Energy Performance Standards (MEPS)²⁰ for new rural housing strengthened. Because the UNDP-GEF project on energy efficiency in buildings has focused on public buildings, the resulting new code for public buildings in Uzbekistan is the strictest, while codes covering residential construction remain the weakest. Activities under this output will include:

- identification of targets for MEPS in new rural houses (taking various climatic zones, availability of construction materials and cost-effectiveness considerations into account)
- development of more stringent building codes for residential buildings in rural areas, incorporating MEPS and other provisions and requirements, such as use of EE materials, renewable energy, mandatory certification of residential buildings, provisions for code enforcement, penalties and incentives, etc)
- development of policy roadmap for the adoption of standards and/or certification of zero-emission or “very low emission” rural houses.

b) Gosarchitectstroy and its regional branches have sufficient capacities to effectively undertake their appraisal function under the Green Mortgage Scheme, including:

- develop methodology and provide guidance on how to check compliance of EE and Low-carbon Homes with design requirements at building construction and commissioning stage;
- on-the-job training to Gosarchitectstroy staff to undertake compliance check in line with developed methodology;
- data-base to collect and store information about constructed building, issued certificates, compliance rate, etc ;
- other activities – subject to capacity gaps assessment to be conducted at PPG stage.

c) Strengthened capacity of Gosarchitectstroy to ensure enforcement of new building codes (including new MEPS for residential buildings). Building code enforcement in Uzbekistan is carried out via a multistage process, involving review of building plans, oversight over the actual construction process, and final approval of building at its commission stage. Within Gosarchitectstroy, the Department of Monitoring of Activity of Design Organizations (known by its Russian initials as UMDPO), is responsible for all stages of building code enforcement. The project will work with UMDPO and its regional branches to conduct capacity gaps assessment, devise and implement comprehensive capacity building strategy. Elements of this strategy may include the following.

- Review and improvement of functional responsibilities for UMDPO and its branches in the process of building code enforcement
- Management training on new roles and responsibilities
- Definition of process for technical training and credentialing of UMDPO staff
- Delivery of training for UMDPO staff on design, construction, and operation of EE buildings
- Study and delivery of training for UMDPO staff on content of revised building energy codes
- Delivery of seminars for architects and engineers on EE design, construction, and the content of revised codes
- Material support for UMDPO, in particular its regional branches, including procurement of required soft and hardware (i.e. infrared imaging equipment)
- Enhancement of technical linkages with other Gosarchitectstroï departments

²⁰ MEPS targeted in this project only cover minimum energy performance requirements in residential buildings.

In addition to institutional strengthening, the project will facilitate better enforcement of the new codes through the drafting, publication and dissemination of official guidance manuals on energy-efficient design solutions, calculation methods, and interpretation of the code. Training participants will include staff from UMDPO (both in headquarters and in regional branches) and architects from leading design agencies.

d) Land-use plans and zoning analyzed and recommendations and training provided to maximize efficient resource use in rural areas. The rationale behind this output is to incorporate principles of environmentally sustainable design and resource efficiency at the stage of village/area master planning and infrastructure planning rather than at the relatively late stage of building design. Activities under this output will include pilot initiatives utilizing these approaches to planning of new settlements. On the basis of these pilot activities, proposals will be formulated for the government on how to update/improve existing spatial planning regulations and approaches. Recommendations may include specific guidance on policies and regulations for low-carbon land-use planning, and training provided would be designed to strengthen the capacity to incorporate these principals into national and sub-national decision-making. Training would target the following groups: regional municipalities and their district branches; the “Kishloq Qurilish Loyikha” Design and Survey Institute; the “Kishloq Qurilish Invest” Engineering Company; the departments of the State Committee for Land Resources, Geodesy, Cartography and State Cadastre responsible for land-use planning; and the Housing and Utilities Unit of the Ministry of Economy.

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

Finally, component 4 will help 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 provided to end-users (rural populations etc.). Activities under this output are designed to increase the awareness of these groups of the potential benefits (and potential savings in operating costs) of low-carbon houses and settlements. Outreach activities will be 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 (and possibly agriculture) sectors.

The initial phase of the scheme (covering first 2,000 green mortgages) will be implemented in two pre-selected regions of Uzbekistan:

- a) Aral sea region (Karakalpakstan), the region most vulnerable to the impacts of climate change and affected by the environmental consequences of the Aral sea disaster
- b) Ferghana valey, the region experiencing acute shortage of energy resources with rural population having only limited centralized energy supply in winter months (thus the need for EE and renewable energy solutions in homes is more pronounced).

In these regions, the project will engage a number of local NGOs, community-based organizations and vocational training centers to reach out and advocate for the benefits of the EE/Low-carbon homes to local population. In addition, the project will work with participating banks to ensure that information about the Green Mortgage Scheme is made available to all potential borrowers when they approach the bank for loan.

Additionally, this awareness raising work presents a unique opportunity to link the project’s climate change mitigation activities with ongoing development efforts supported by UNDP to strengthen the effectiveness of local governance and citizen participation in local planning in Uzbekistan, and by its work more broadly on sustainable

local development.²¹ To do so, regional and district governments and other sub-national organizations will be trained to consider climate change in planning, decision-making, and budgeting. Training and capacity strengthening activities will be developed to strengthen the capacity of these stakeholders in selected regions to incorporate climate change and sustainability considerations and specific targets (e.g. renewable energy use, waste minimization, etc.) into local development in rural areas. Activities will also introduce strategies to increase the sustainability of energy and water supplies in rural settlements. Furthermore, this component will also include activities to initiate the participation of citizens in low-carbon planning for selected rural settlements, a process that will raise awareness of the potential for mitigation at the local level and will support the development of plans that are inclusive.

1.4 Incremental / Additional Cost Reasoning

The project will deliver substantial socio-economic benefits for Uzbekistan and its most vulnerable citizens, who reside in rural areas. The project's launch scheme for green mortgages will directly benefit up to 2,000 rural households (over 10,000 people) by providing them with affordable financing for comfortable and energy efficient housing. This is a unique example of climate change mitigation actions that directly benefit the poor and have a positive impact on alleviating energy poverty and improving climate resilience. Another important co-benefit of the project is the development of domestic production of EE building materials and subsequent opportunities for job creation and economic growth in rural areas, which will be spurred by the adoption of new building codes and higher energy performance requirements.

The proposed project includes a significant direct financial contribution from the Government of Uzbekistan (from its own resources and through the ADB and IsDB loan) related to the construction of 2,000 EE and low-carbon houses under the launch scheme for the green mortgage mechanism. Additional financing resources can be leveraged once the full phase of the green mortgage scheme is in place.. These additional resources could include the national budget, financial institutions, and residents, who will be paying their mortgages and investing in other mechanisms.

As its GEF Agency contribution, UNDP will contribute core funding as co-financing for project management activities. It will also leverage additional funding from donors, and additional projects in the UNDP Uzbekistan portfolio will provide complementary capacity strengthening. For example, the Local Governance Support Program—Phase II supports strengthened public administration and enhanced effectiveness and inclusiveness of government at both the central and local levels. It will therefore provide opportunities to cooperate on capacity strengthening activities in Components 2 and 4 of the proposed project. Furthermore, the BMUB-funded Green Climate Readiness Programme will provide capacity strengthening in government related to climate-related financing and investments, a scope of work that provides a clear linkage with this proposed project.

Funding from the GEF is requested to overcome systemic barriers for implementation low-carbon rural housing in Uzbekistan, specifically those barriers related to affordability of low-carbon rural housing, the inadequacy of regulatory framework, and capacity and awareness constraints in the building and planning sector. *In the absence of GEF support, none of the proposed incremental project activities will be implemented; i.e., the National Rural Housing Program will construct over 87,000 rural houses. However, these units will comply only with existing energy performance requirements and they will consume a higher amount of energy (and incur higher costs for their owners) over their lifetimes. Significant potential energy savings (and corresponding GHG emission reductions) will go unrealized. In addition, there will not be an opportunity to introduce green mortgages or other credit mechanisms to support efficient lighting and appliances in Uzbekistan, as the country would not be able to develop and maintain these particular non-grant mechanisms without the capacity development activities to be provided under the proposed GEF project.*

1.5 Global Environmental Benefits

²¹ UNDP 2013: Programming Sustainable Local Development: A Handbook for Eastern Europe and Central Asia.

Over the long term, the project will generate significant GHG emissions reductions from rural houses in Uzbekistan.

The initial launch scheme for green mortgages under Component 1 of the project will result in direct GHG emission reductions of 15,900 tCO₂e/year or 318,000tCO₂e over investment lifecycle (20 years) from the construction of 2,000 energy-efficient houses. These estimates are conservative and simplified (they do not take into account additional GHG reduction impact of low-carbon houses which has to be calculated separately).

They are based on the following input data and assumptions (for a single, average house):

- Baseline energy use: 244 kWh/m²
- Energy efficient rural house energy use: 118 kWh/m²
- Average space: 155 m²
- Total energy savings: 16.4 MWh/year
- Emission factor²²: 0.485 tCO₂/MWh
- GHG savings: 7.95 tCO₂/year
- GHG savings, lifetime: 159 tCO₂

By supporting the replication and full scaling-up of the green mortgage scheme, the project will generate indirect reductions of over 159,000 tCO₂e/year or 3.18 million tCO₂e over the investment lifecycle as a result of the construction of additional 20,000 EE houses through the scaled-up green mortgage scheme. Furthermore, the application of revised building codes and more stringent MEPS for all new state-funded rural construction (cca 87,000 houses) will yield even higher energy savings and GHG emission reductions; i.e., at least 690,000 tCO₂ in 2017-2019 or 13,8 mln tCO₂e over investment lifecycle.

GEF support will leverage GHG emission reductions in a highly cost-effective manner: by covering only up to 5-10% of additional cost of EE house construction, it will reduce energy requirements and GHG emissions in a building by 40%, that is by 7.95 tCO₂/house/year.

National and local environmental benefits will also be substantial. They include the following:

- Strengthened local governance in such areas as land-use planning, building/construction permit issuance, and environmental monitoring and protection
- Improved skills and job creation potential of rural residents on eco-building construction, installation and maintenance of modern technologies in buildings, production of eco-materials and products
- Improved access to financing for rural residents
- Better quality of life and access to essential services (housing, energy, water, sanitation) for rural population, resulting in decreased disparities and inequalities

Another significant benefit of the proposed project would be a significant reduction in energy poverty among the most vulnerable population in Uzbekistan: rural families. Because buildings are responsible for over 50% of domestic energy use, the project would help improve energy security not only for this group, but for the country in general.

1.6 Innovativeness, Sustainability, and Potential for Scaling Up

By providing a small incremental share of the cost of low-carbon housing, GEF funding will result in a self-sustaining and scalable mechanism for financing low-carbon housing, and it will leverage significant additional resources for sector-wide market transformation (see Table 7 above).

²² Natural gas is the main source of fuel for heating in Uzbekistan

The proposed project is highly innovative at the global level because it is one of the first attempts to promote climate change mitigation in the rural housing sector and combine specific climate mitigation activities with sustainable low-carbon planning and livelihood improvement for rural communities. Furthermore, the green mortgage mechanism developed under the project could serve as a valuable new tool for promoting low-carbon housing throughout the GEF efficient buildings portfolio. At the regional level, green mortgages and consumer credit for efficient appliances represent significant innovations, particularly for rural areas.

The proposed project would also contribute to innovative programming under GEF-6 by supporting the design of innovative policy approaches addressing climate mitigation concerns and socio-economic consequences (GEF-6 Programming, 2014: 56). The project is directly relevant to Program 2 under the GEF-6 Climate Change Mitigation Focal Area CC 1. The project will demonstrate innovative policy packages in the form of MEPS for rural housing, low-carbon land-use planning policies for new settlements, and non-grant mechanisms, such as green mortgages. The project's approach of integrating energy solutions with natural resource management and the focus on low-carbon land-use planning and integrated territorial management is also highly consistent with this programming area for GEF-6 and represents a new direction in mitigation projects.

The key elements of the project that shall ensure project's sustainability beyond international support are as follows: 1) proposed green mortgage scheme will be imbedded in the existing and highly successful mortgage programs run by local banks; 2) revised energy performance building codes and the capacity to ensure their rigorous application and enforcement, which will build in a lower emissions trajectory long after project closure; and 3) partnership and assistance to the local financial institutions to establish and promote non-grant mechanisms for low-carbon housing.

The potential to scale up the project is incorporated into the project design in three ways: 1) through the adoption of mandatory policies and regulations for low-carbon housing and settlements, such as MEPS for rural houses; 2) through the development of a market for efficient materials and technologies; 3) through the establishment of non-grant mechanisms to stimulate and incentivize the purchase of low-carbon homes; and 4) through close collaboration with the BMUB-supported project on GCF Readiness, which will develop a pipeline of viable investment proposals that can be scaled-up with GCF funding. Beyond the direct project replication measures, the potential for replication is large--not just in Uzbekistan (e.g. in the urban residential market), but also in the development of designs and best-practice financing mechanisms that could be used in neighboring countries. The potential for scaling up low-carbon housing and settlements is high in Central Asian region, especially in neighboring Kazakhstan and Turkmenistan, which have similar demographic and development challenges.

Regarding adoption of more stringent building codes the project will adopt the following approach:

1. Gosarchitectstroy is the key national agency and project implementing partner has received a mandate from the Government to prepare regular (every 5 years) revision of building codes. Next stage of code revision to be undertaken by Gosarchitectstroy will take place in 2017-2019 and will cover residential buildings. The project will use this opportunity to introduce new requirements and will work provide required technical assistance and support to Gosarchitectstroy. In fact, at PIF preparation, Gosarchitectstroy has already requested UNDP-GEF assistance with code revision.
2. Once revised codes are adopted (2017-2019), it will be responsibility of Gosarchitectstroy to ensure that all standard designs used in state-funded construction program (such as the ones for rural housing) comply with the requirements of new code. No state funding can be allocated to construction of houses which do not comply with code requirements. The project will utilize this unique mandate of Gosarchitectstroy and will help the Agency to align standard design with code requirements thus effectively ensuring that all new state-funded rural construction (i.e. 87,000 homes) follows new design and requirements.
3. Finally, the project will strengthening the enforcement capacity of Gosarchitectstroy and regional branches to monitor and conduct compliance check during the construction process, envisaged in Component 3.

All in all, application of revised building codes for new 87,000 rural homes to be built under State Program will be

ensured through close collaboration with and assistance to Gosarchitectstroy, which has a unique mandate from the Government to regularly revise building codes and ensure their application in all state-funded construction programs.

2. *Stakeholders*. Will project design include the participation of relevant stakeholders from civil society and indigenous people? (yes /no) If yes, identify key stakeholders and briefly describe how they will be engaged in project design/preparation:

The following table includes an overview of stakeholders and their anticipated role in the preparation of the proposed project.

Table 8: Stakeholder Overview

Type of Stakeholder	Name of Stakeholder	Relevance to Project and Role in Preparation
Government	Gosarchitectstroy	Gosarchitectstroy is proposed as the implementing partner for project for project preparation activities due to the following factors: 1) Its mandate for and expertise in developing and enforcing state policies in the building sector; 2) Its leading role in implementing all state-funded construction programs, including the National Investment Programme “Housing for Sustainable Rural Development”; and 3) Its prior experience and leading role in designing and implementing successful international projects and initiatives on sustainable buildings, such as the UNDP-GEF “Energy Efficiency in Public Building” project.
	Ministry of Economy	The Ministry defines the exact geographical and financial scope of the National Rural Housing Program implementation on annual basis. It also approves the final technical design of houses to be constructed and the investment from national budget. The project preparation team will coordinate with the Ministry regarding the proposed location of project activities and other investment details regarding the financing mechanism(s).
	Ministry of Finance	The Ministry of Finance is provides the annual allocation in the state budget for the National Rural Housing Program and is the government agency that handles sovereign lending and ODA. The project preparation team will ensure the proposed project reflects planned expenditures in rural housing and rural development as forecast by the Ministry.
	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 and will be consulted regarding baseline capacity and capacity needs in land-use management and land-use planning in rural areas.
	Regional and district municipal authorities	This group will be consulted on their training and capacity strengthening needs in the area of land use planning and zone, particularly regarding the integration of climate change considerations into local decision-making.
	Local self-governance units; i.e., Makhallas and Village Citizen Assemblies (сельский сход граждан)	These groups will also be consulted on their training and capacity strengthening needs in the area of land use planning and zone, particularly regarding the integration of climate change considerations into local decision-making.
	Employees in	The project preparation team will consult with this group regarding their

	rural health and educational facilities	potential role in demonstrating technologies (in areas where they have been piloted in public buildings) and in disseminating project information.
Private Sector	Commercial Banks such as Kishlok Kurilish Bank (Rural Construction Bank) and Ipoteka Bank (Mortgage Bank)	Kishlok Kurilish Bank (Rural Construction Bank) is responsible—in conjunction with Gosarchitectstroy—for providing financing for rural housing under the “Housing for Sustainable Rural Development” investment program. Ipoteka Bank is a major mortgage provider and a source of construction financing in Uzbekistan. Both banks will be consulted during the project preparation period on the most feasible type of financing mechanism or mechanisms to support low-carbon rural housing.
	Homeowners taking out green mortgages	Homeowners are a critical stakeholder group, particularly as they provide a 40% downpayment on the EE and low-carbon homes. A sample of homeowners will be consulted during the project preparation period regarding their demand for different green mortgage products, as well as their demand and experiences with EE and low-carbon homes.
	Manufacturers and distributors of construction materials and technologies	At least five of these companies will be consulted during project preparation to determine the current availability of efficient materials and equipment on the market and to identify potential areas for supply chain support activities.
Other Organizations in Uzbekistan	Organizations supporting the dissemination of efficient technologies	These organizations, such as Energy Centre Uzbekistan, the Association of Producers of Renewable Energy, and the Chamber of Commerce and Industry of Uzbekistan will be consulted regarding their experiences in technologies for rural housing, rural infrastructure, and the construction sector.
	Research organizations	The Institute of Energy and Automation, which operates under the Academy of Sciences, will be consulted on technologies and current R&D efforts. The Center for Economic Research (CER) and the Institute of Forecasting and Macroeconomic Research may also be consulted.
	NGOs	Organizations such as the Ecological Movement of Uzbekistan and the Uzbek Club on Alternative Energy will be consulted regarding their experiences with awareness-raising activities at the sub-national level that would be relevant to Component 4 of the project.
Multilateral Organizations	Asian Development Bank	ADB will be consulted regarding lessons learned to date under the rural housing loan and its proposed future activities in Uzbekistan.
	Islamic Development Bank	The IDB will be consulted regarding its preliminary interest in supporting a mechanism that would extend consumer credit to rural households purchasing efficient appliances.
	UNECE	The project preparation team will consult with UNECE regarding its support for the Country Profile on Housing and Land Management for Uzbekistan, the Inter-Agency Working Group on the development of the profile, and on information that will be collected for the profile that may be of use to the proposed project.

3. *Gender Considerations*. Are gender considerations taken into account? (yes /no). If yes, briefly describe how gender considerations will be mainstreamed into project preparation, taken into account the differences, needs, roles and priorities of men and women.

Gender issues will also be addressed directly in the following ways throughout the life cycle of the proposed project:
1) Project preparation activities will include a baseline analysis of women’s participation in home ownership and mortgage financing²³ and will provide recommendations on the most effective messaging and communication

²³ It should be noted that the current rural mortgage credit program has taken gender issues into account and has prioritized vulnerable households, including women-headed households.

channels for reaching rural women in Uzbekistan; 2) The project will apply a gender marker as per UNDP guidance; 3) The project will incorporate gender issues in the project results framework, including gender-sensitive actions, indicators, targets, and/or budget; 4) The project will monitor the share of women and men as direct beneficiaries; and 5) An analysis of women’s inclusion in project activities will be included in both the mid-term evaluation and the terminal evaluation of the project and will be explicitly stated in the terms of reference for those evaluations.

4 Risk. Indicate risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and, if possible, propose measures that address these risks to be further developed during the project design (table format acceptable):

The following table summarizes potential project risks and lists corresponding risk mitigation strategies:

Table 9: Project Risk Summary

Description	Rating	Explanation
Financial Risk	Medium	Due to current interest rates and loan terms, there is a moderate risk that the financial mechanism developed by the project could experience low-uptake by borrowers; however, it should be noted that the mortgage market has been growing steadily in the last 6 years (See Table 3) and currently still is experiencing unfulfilled demand . The project will mitigate this risk by studying the loan market thoroughly, working closely with commercial banks to pilot mechanisms, and developing a financial incentive that is responsive to the sensitivities of lenders and borrowers.
Market risk	Medium	Low residential energy tariffs and the subsidized domestic price of natural gas may limit demand for EE/RE technologies in rural housing sector. However, the risk is counter-balanced by the fact that rural population is already suffering from chronic energy shortages and unstable supply of energy from centralized sources (gas and power network). Therefore the demand and motivation for more EE houses and use of RE stems from the need to improve living conditions; i.e., consumers are willing to pay to ensure a secure supply of energy.
Technical Risk	Low-Medium	There is a low to moderate risk that the technologies in the project could experience difficulties in operations or in maintenance. This risk will be mitigated by thorough screening of technologies, ongoing support to manufacturers and distributors, and monitoring.
Political Risk	Low	There is only a low risk that energy efficiency and renewable energy might cease to become a priority for the Government of Uzbekistan. Resource efficiency is a pillar of the country’s strategic planning documents, and the government is currently very supportive of ongoing projects in this area.
Climate Change Risk	Low	The climate-related risk of the project is considered low because long-term climate impacts (i.e. temperature extremes, increased average temperatures, and reduced precipitation) will be directly addressed through housing units that will be more resource efficient and comfortable (and yet more affordable) at both high and low temperatures.
Environmental and Social Risks	Low	The proposed project will be implemented in accordance with UNDP’s environmental and social screening policies to ensure that any environmental risks are minimized. Furthermore, specific analysis will be undertaken during the PPG to ensure that the project design is inclusive and that women and other vulnerable groups will be explicitly considered during project implementation.

5. Coordination. Outline the coordination with other relevant GEF-financed and other initiatives:

While there are several other initiatives in Uzbekistan aimed at supporting sustainable energy, there are currently no other initiatives focused specifically on the support for and development of energy efficiency in the rural housing sector. The following table provides an overview of other relevant initiatives with which the project will coordinate.

Table 10: Coordination with Other Relevant Initiatives

The UNDP-GEF “Promoting Energy Efficiency in Public Buildings” project	This project is designed to reduce energy consumption and associated greenhouse gas emissions in public buildings in Uzbekistan, particularly in the healthcare and educational sectors, by improving building norms and standards, demonstrating integrated building design approaches, and developing the capacity of local specialists in design, construction, and maintenance. ²⁴ While this project will conclude before the proposed rural housing project starts, its implementation will overlap with the PPG phase of the proposed project, and there is a significant opportunity to learn from the experiences of the public buildings project, particularly regarding capacity strengthening for Gosarchitectstroy in the area of building codes and training and outreach at the sub-national level.
ADB “Housing for Integrated Rural Development Project”	The project will work in close partnership with ADB project which will provide baseline financing for the Construction of low-carbon housing and settlements under Component 2.
The UNDP-Adaptation Fund Project “Developing Climate Resilience of Farming Communities in Drought-Prone Parts of Uzbekistan”	This project, which is implemented in partnership with the Hydrometeorological Service of Uzbekistan (Uzhydromet) and which began in May 2014, is designed to develop climate resilience of farming and pastoral communities in the drought prone parts of Uzbekistan, specifically Karakalpakstan. The project will help the central, regional and local governments and vulnerable farmers and pastoralists to withstand the current and future impacts of climate change. The proposed rural housing project will coordinate with this project in order to benefit from its contacts with farming and pastoral communities and to share project outputs on improved capacity for land use planning and zoning in rural areas.
The UNDP project “Supporting Uzbekistan in transition to a low-emission development path”	This project, which will finish in 2014, was designed to incorporate climate finance and climate change mitigation into country policies and programs. The proposed rural housing project will reference this project’s work on a low-emission development strategy for Uzbekistan, its experience with various climate financing mechanisms, and will draw upon relevant sectoral analysis conducted by the project.
The UNDP project “Local Governance Support Program/Phase-II”	This project, which started in 2014 and will run through December 2017, is designed “to promote more effective, accountable and inclusive governance in Uzbekistan, by enhancing local government performance, increasing citizen participation in local governance, and supporting accountability and transparency” and “to increase the capacity of regional and district level authorities to manage the increased decentralisation and deconcentration of administrative and fiscal authority.” The proposed rural housing project will draw upon the project’s experiences with regional and district level authorities in its capacity strengthening and awareness raising activities and will share information materials on local planning and climate change to be developed under the project with these stakeholders.
The Green Climate Fund Readiness Programme (Germany)	Uzbekistan has been selected for the Green Climate Fund Readiness Programme, and a project proposal is currently being developed

²⁴ A summary of the project’s achievements and results is available here: <http://uz.beeca.net/projects/372>

	(USD 1 million over a 2-year period). The German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) is providing the funding, and the proposed project will communicate with this program in the area of capacity strengthening and awareness raising.
The UNEP-GEF Enabling Activity to Support the Third National Communication of the Government of Uzbekistan to the UNFCCC	This project, which is conducted in partnership with the Hydrometeorological Service of Uzbekistan (Uzhydromet) will produce the country's Third National Communication to the UNFCCC. The proposed rural housing project will communicate with this project, particularly regarding the chapters of the communication regarding sectoral GHG emissions, GHG mitigation, and activities under Article 6 of the UNFCCC.
The World Bank-GEF Sustainable Agriculture and Climate Change Mitigation Project	This project, which is scheduled to run through the end of 2016, is designed to promote energy-efficient and renewable energy technologies that are relevant to agribusiness and farms and to strengthen the capacity to improve degraded land and water conservation in project areas. The proposed rural housing project will communicate closely with this project regarding technology promotion and capacity strengthening.

6. *Consistency with National Priorities.* Is the project consistent with the National strategies and plans or reports and assessments under relevant conventions? (yes /no). If yes, which ones and how: NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, etc.

Uzbekistan's national planning processes clearly state the goal of ensuring that principles of sustainable natural resource use are effectively integrated into policy-making, legislation, and institutions; to allow the country to ensure water, energy, and food security to the population; and to ensure that its development is economically, environmentally, and socially sustainable.

The current draft version of **Vision 2030**, which will serve as the primary development plan for Uzbekistan, directly acknowledges environmental challenges to development and the need to manage social and environmental risks that can be concurrent with rapid economic development. As the draft background paper on environment sustainability for the plan states, "It is clear that whatever growth strategy is chosen, it will have to envisage fundamental changes to the way in which energy and water are used and managed." The environmental elements of the vision include the reduction of energy intensity across all sectors and the introduction of institutional reforms to ensure sustainable resource management.

The **National Low-Emission Development Strategy of Uzbekistan** is under preparation by the Ministry of Economy with technical assistance from UNDP. The strategy is expected to be adopted in 2014. The Strategy prioritizes building sector and energy sector (demand and supply) as the key sectors where investments should be focused.

The **National Program for Increasing Energy Efficiency in Buildings** (2015-2020), which is currently being developed by Gosarchitectstroy, is designed to reduce energy consumption, improve competitiveness, and to catalyze economic transformation and well-being. The program is to include financing and co-financing for a broad variety of measures, including the following: strengthening norms; the development of prototype efficient buildings; research and development; the production of efficient construction materials and air conditioning equipment; tax and customs incentives; the creation of favorable conditions for attracting investment in energy-efficient buildings and facilities; the construction of energy-efficient buildings and facilities; training for architects, engineers, and energy auditors; and other activities.

The Government has also adopted specific presidential resolutions to support rural housing in Uzbekistan, including the following: Resolution PP-1167 "On additional measures on expansion of housing construction in rural areas" (adopted 3 August 2009); Resolution PP-1354 "On additional measures on expansion of individual housing construction in rural areas on basis of standard designs" (17 June 2010); Resolution PP-1403 "On additional measures on development of planning and improvement of housing construction in rural area" (8 September 2010);

and Resolution PP-1683 “On first-priority measures on realization of the Program of multi-tranche financing of the project ‘Housing construction development in rural area’ with participation of ADB” (11 January 2012).

The Initial National Communication to the UNFCCC ranked measures to improve energy efficiency in building sector as the most cost-effective options to reduce GHG emissions in Uzbekistan: while average GHG abatement costs in Uzbekistan are estimated at 6\$/tCO_{2e}, in building sector this ration accounted for 2\$/tCO_{2e} and is the lowest in comparison with other sectors (power – 4\$/tCO_{2e}, industry – 7\$/CO_{2e} agriculture – 4\$/CO_{2e}, and transport – 6\$/CO_{2e}). The **second national communication** noted that energy consumption in the residential sector remained the second highest source of GHG emissions in the country (after the energy industry) from 1994 through 2005, the latest year for which figures were available (SNC: 45).

7. *Knowledge Management.* Outline the knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives, to assess and document in a user-friendly form, and share these experiences and expertise with relevant stakeholders.

The project will use regional knowledge-management platform for UNDP-GEF energy efficiency projects, available at www.beeca.net, as its primary tool to share experiences, as well as to learn from other relevant UNDP-GEF projects in Central Asia and Caucasus, along with other social media, such as youtube and facebook. It will regularly produce and share lessons learnt reports, videos, and other media products via beeca.net and its accounts in facebook, youtube and other social media, such as http://www.youtube.com/channel/UC4HxHI00KIa_h6BuE1oaprw?safety_mode=true and <http://uz.beeca.net/projects/372>). Detailed KM plan will be elaborated at PPG stage and will make an integral part of the project’s M&E plan.


PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. Record of Endorsement²⁵ of GEF Operational Focal Point (S) on Behalf of the Government(s): (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this template. For SGP, use this [SGP OFP endorsement letter](#)).

NAME	POSITION	MINISTRY	DATE (MM/dd/yyyy)
Mr. Sergey Myagkov	Operational Focal Point Deputy Director	NIGMI	07/07/2014

B. GEF Agency(ies) Certification

This request has been prepared in accordance with GEF policies²⁶ and procedures and meets the GEF criteria for project identification and preparation under GEF-6.

Agency Coordinator, Agency name	Signature	Date (MM/dd/yyyy)	Project Contact Person	Telephone	Email
Adriana Dinu UNDP – GEF Executive Coordinator		March 3, 2015	Marina Olshanskaya UNDP-GEF Regional Technical Adviser	+421-907- 840-152	marina.olshanskaya@undp.org

²⁵ For regional and/or global projects in which participating countries are identified, OFP endorsement letters from these countries are required even though there may not be a STAR allocation associated with the project.

²⁶ GEF policies encompass all managed trust funds, namely: GEFTF, LDCF, and SCCF