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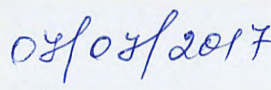
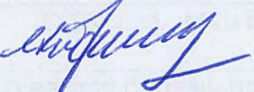
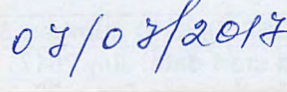
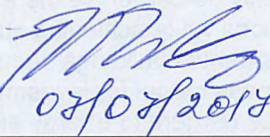
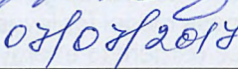
Project Document for nationally implemented projects financed by the Green Climate Fund (GCF)

Project Title: De-Risking and Scaling-up Investment in Energy Efficient Building Retrofits	
Country: Armenia	
Implementing Partner: Ministry of Nature Protection of Republic of Armenia	Management Arrangements: National Implementation Modality (NIM)
<p>UNDAF Outcome 7/Country Programme Outcome(s) 4 (13): By 2020, sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation and green economy are introduced and applied</p> <p>Expected CPAP Output: 4.4 Low carbon and green economy become priority for the Government, supported by relevant regulatory framework and activities.</p>	
<p>UNDP Strategic Plan Output: 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)</p>	
UNDP Social and Environmental Screening Category: low	UNDP Gender Marker for each project output:
	<i>Output 1: gender marker rating = 2</i>
	<i>Output 2: gender marker rating = 2</i>
	<i>Output 3: gender marker rating = 2</i>
<i>Output 4: gender marker rating = 2</i>	
Atlas Project ID number: 00098348	Atlas Output ID number: 00101711
UNDP-GEF PIMS ID number: 5684	GCF ID number: FP010
Planned start date: July 2017	Planned end date: June 2023
GCF Effectiveness Date: 30 June 2017	
<p>LPAC date: The project was approved by UNDP Local Project Appraisal Committee (LPAC) on 27 July 2015 and approved in its final form on 30 June 2017.</p>	
<p>Brief project description: Using an integrated suite of de-risking interventions, the Project seeks to systematically de-carbonise the existing building stock in Armenia to reduce greenhouse gas (GHG) emissions while achieving sustainable development benefits. The Project, addressing both public and residential buildings, focuses on creating a favourable market environment and a scalable business model for investment in energy efficiency retrofits by addressing market barriers. These barriers to energy efficient building renovation are addressed through a combination of policy and financial de-risking instruments and targeted financial incentives to key market players.</p>	
<p>To address each specific risk area, the Project is structured under four components: (i) building sector monitoring, reporting and verification (MRV) and knowledge management, (ii) policy de-risking, (iii) financial de-risking, and (iv) financial incentives. By systematically targeting barriers,</p>	

the Project will significantly reduce the investment risk profile of energy efficiency building retrofits to encourage private sector investment and thereby scale-up investment in energy efficiency building retrofits in Armenia.

The Project will lead to sizeable energy savings and accompanying GHG emissions reductions (between 5.1 and 5.4 million tCO₂ over the 20-year lifetime of the investments), green job creation and poverty reduction. In addition to funding from the Green Climate Fund, the Project will catalyse private and public sector financing of approximately US\$ 110 million. The Project will ensure gender equality through enabling inclusive mechanisms for women's and men's equal participation in design, implementation, monitoring and evaluation, considering their diverse experiences for assessments and decision-making, and enabling non-discriminatory access to resources and capacity development.

FINANCING PLAN	
GCF grant	USD 20,000,000
UNDP TRAC resources (cash)	USD 420,000
UNDP parallel funding	USD 1,000,000
(1) Total Budget administered by UNDP	USD 21,420,000
PARALLEL CO-FINANCING (all other co-financing (cash and in-kind))	
Yerevan Municipality (cash funding)	USD 8,000,000
Government (in kind)	USD 400,000
European Investment Bank (EIB)	USD 86,250,000
(2) Total co-financing	USD 94,650,000
(3) Grand-Total Project Financing (1)+(2)	USD 116,070,000

SIGNATURES		
Signature: Artsvik Minasyan, Minister, Ministry of Nature Protection of the Republic of Armenia 	Agreed by the Government	Date/Month/Year: 
Signature: Artsvik Minasyan, Minister, Ministry of Nature Protection of the Republic of Armenia 	Agreed by the Implementing Partner	Date/Month/Year: 
Signature: Bradley Busetto, UN Resident Coordinator, UNDP Resident Representative	Agreed by UNDP	Date/Month/Year:  

Disbursement:

Annex 1 forms an integral part of this Project Document and to this end the Government hereby acknowledges that it has read and agrees to be bound, mutatis mutandis, by the obligations and agreements set forth in the [FAA] to the extent that they relate to actions of the Government, including, but not limited to, those set forth in Clauses 8 and 9.02 of the FAA. For the avoidance of doubt, the Government shall ensure that all conditions that relate to its actions are met and there is continuing compliance, and understands that availability of GCF funding is contingent on meeting such requirements and such compliance.

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List of acronyms

APR	Annual Project Report
AWP	Annual Work Plan
CDM	Clean Development Mechanism
CIS	Commonwealth of Independent States
CPAP	Country Programme Action Plan
EE	Energy efficient / Energy efficiency
EECA	Eastern Europe and Central Asia
EIB	European Investment Bank
EMIS	Energy Management Information System
EPIU	Environmental Project Implementation Unit
ERC	Evaluation Resource Centre
ESCO	Energy Service Company
EU	European Union
FI	Financial Institution
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
HACT	Harmonized approach to cash transfer
HOA	Home Owners' Association
HMC	Housing Management Company
IFC	International Finance Corporation
INDC	Intended Nationally Determined Contribution
ISO	International Organisation for Standardisation
ITAP	Independent Technical Advisory Panel (of the GCF)
M&E	Monitoring and Evaluation
MoNP	Ministry of Nature Protection of Republic of Armenia
MoV	Means of verification
MRV	Monitoring, reporting and verification
MWh	Megawatt-hour
NAMA	Nationally Appropriate Mitigation Action
NDA	National Designated Authority
NEEAP	National Energy Efficiency Action Plan
NGO	Non-governmental organisation
NIM	National Implementation Modality
NPESRE	National Program on Energy Saving and Renewable Energy
OECD	Organisation for Economic Cooperation and Development
O&M	Operation and Maintenance
PIR	Project Implementation Review
PM	Project Manager
PMT	Project Management Team
PPR	Project Progress Report
RA	Republic of Armenia
R2E2 Fund	Renewable Resources and Energy Efficiency Fund of Armenia
SEAP	Sustainable Energy Action Plan
SBAA	Standard Basic Assistance Agreement
SCCF	Special Climate Change Fund
SECU	Social and Environmental Compliance Unit of UNDP
SESP	Social and environmental screening procedure
SME	Small and medium-sized enterprise
TOR	Terms of Reference
UNDAF	United Nations Development Assistance Framework
UNDP	United Nations Development Programme
UNDP CO	UNDP Country Office
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States Agency for International Development
USD	United States Dollar
VAT	Value-Added Tax
WB	World Bank

EXECUTIVE SUMMARY

The *De-risking and Scaling-up Investment in Energy Efficiency Building Retrofits* Project seeks to systematically de-carbonise the existing building stock in Armenia to reduce greenhouse gas (GHG) emissions while achieving sustainable development benefits. To do so, the Project focuses on reducing the overall investment risk profile of energy efficiency retrofits in the building sector – one of the major energy consumers in Armenia. Creating a favourable market environment and scalable business model for investment in energy efficiency retrofits will lead to sizeable energy savings, GHG emissions reductions, green job creation and poverty reduction.

The Project addresses market barriers to energy efficient building renovation via a combination of policy and financial de-risking instruments and targeted financial incentives to key market players. By targeting policy, financial, market, technical and capacity barriers, the Project will significantly reduce the overall investment risk profile of energy efficiency building retrofits to encourage private sector investment and thereby scale-up investment in energy efficiency building retrofits in the country. The Project's four components each addressing a specific risk area: (i) building sector monitoring, report and verification (MRV) and knowledge management; (ii) policy de-risking; (iii) financial de-risking; and (iv) financial incentives.

First, the Project will support the development of a building sector MRV framework, including guidelines and methodologies building on UNDP's experience with establishing Energy Management Information Systems (EMIS). The Project will also support the knowledge and collective learning processes in Armenia through promoting better information dissemination to stakeholders and sharing lessons learned.

Policy de-risking, under the second component, will support national, sub-national and local authorities to adopt and implement an enabling policy framework for energy efficiency retrofits. Investment risks for commercial lenders of energy efficiency retrofit finance will be addressed through policy de-risking tools including:

- modernisation and enforcement of energy efficiency standards and mandatory energy performance standards for retrofitted buildings;
- monitoring and enforcement of associated construction norms and standards;
- development, introduction and enforcement of adequate secondary legislation for providing functional models and rules for all multi-apartment building management bodies to undertake energy efficiency retrofits;
- improvement and implementation of legislation that will assist the management of energy efficiency building retrofits for different types of buildings;
- assistance to residents and common-share building organisations on collective decision-making on the complex issues of energy efficiency retrofit investment.

The Project will also provide technical assistance to selected market players such as building owners, managers, owner associations and local government to identify, develop and aggregate technically and financially feasible energy efficiency retrofit projects.

The financial de-risking component – in partnership with the European Investment Bank (EIB), the R2E2 fund, local banks and other relevant national and international financial institutions – will provide access to affordable capital for energy efficiency retrofits. De-risking instruments will take several forms, including credit lines from financial institutions and/or loan guarantees to stimulate local commercial banks to lend to private ESCOs and/or building owners. Technical assistance will be offered to local commercial banks to develop their products, appraise investments and develop a pipeline of projects. Information on the availability of energy efficiency building retrofit finance packages will be disseminated.

Targeted financial incentives, through component 4, will be provided and offered to building/apartment owners, or the ESCOs serving these clients, to ensure that the most vulnerable households can afford the costs of energy efficiency retrofits. Due to widespread poverty and inequality prevalent across urban areas in Armenia, at least one-fifth of households cannot afford to keep adequately warm at reasonable cost and are unable to afford the upfront costs of energy efficiency retrofits. Direct incentives for vulnerable groups are required to help address the affordability gap and stimulate the demand for energy efficiency retrofits. Grants will support poor and vulnerable households to allow them access to improved thermal comfort and cost / energy savings.

Overall, the Project is aligned with the GCF investment framework that emphasises upgrading existing infrastructure and supporting efforts to strengthen urban systems. The Project builds on and leverages UNDP's extensive experience supporting the Government of Armenia and successfully engaging the private sector in reducing the barriers for energy efficiency in heating, building and lighting sectors. The Project will create a favourable market environment and a scalable business model for investment in energy efficiency retrofits in Armenia, leading to GHG emissions reductions of between 5.1 and 5.4 million tCO₂ over the 20-year lifetime of the investments. In addition to funding from the GCF, the Project will catalyse private and public sector financing of approximately US\$ 110 million.

The Project prioritizes gender equality and will ensure inclusive mechanisms in place for women's and men's equal participation through design, implementation, monitoring and evaluation in all four project outputs as expert or beneficiary; informing assessments and decision-making; and having non-discriminatory access to resources and capacity development. In line with the UNDP Armenia Gender Equality Strategy, the Project will apply a gender disaggregated data framework and will target participation of women of at least 30%. The Gender Marker of the Project in all outputs is GEN2, aimed at a significant contribution towards gender equality dimension.

1. DEVELOPMENT CHALLENGE

1.1. Strategic context and global significance

Greenhouse gas (GHG) emissions from the building sector have more than doubled since 1970 and now represent 19% of all global GHG emissions. The lower middle-income countries in Eastern Europe and Central Asia (EECA), including Armenia, account for almost 40% of all non-OECD GHG emissions in the buildings sector. These countries also exhibit some of the world's highest levels of per capita energy use in buildings, as well as potential for further growth considering the improvement in economic conditions on those countries, which make them good candidates for a Green Climate Fund (GCF)-supported energy efficiency retrofits acceleration project.

Globally, the building sector offers the greatest potential for abatement. Increasing the efficiency of energy use in buildings has estimated mitigation potential of 3.3 to 4 GtCO_{2e}/year. Cost-effective best practices and technologies, such as deep energy efficient retrofits, can achieve 50-70% energy savings when they are broadly applied.

The buildings sector is one of major energy consumers in Armenia. According to Armenia's 2010 National GHG Inventory in the National Communication to the UNFCCC, almost 28% of primary energy resources are consumed in buildings, mostly in the residential sector, comprising the 20% of the total GHG emissions. Armenia's Third National Communication to the UNFCCC (2015)¹ identifies public, residential and commercial buildings among the country's top priorities for climate change mitigation: GHG emissions from buildings grew fivefold between 2000 and 2010, from 345 ktCO₂ in 2000 up to 1,723 ktCO₂ in 2010. Armenia's UNFCCC Technology Needs Assessment² (2003) identifies heat supply to buildings as one of the main sources of GHG emissions and as having a large potential for energy saving and emission reduction. The Intended Nationally Determined Contribution (INDC) of Armenia³ (2015) identifies "energy (renewable energy and energy efficiency)" and "urban development (building and construction)" among the main sectors included in the national mitigation contributions of the Republic of Armenia.

Due to Armenia's markedly continental climate with a long heating season and winter average temperatures around -5°C and an absolute minimum temperature of -42°C, energy consumption and GHG emissions in the Armenian building sector are mainly associated with space heating. The average thermal energy consumption for space heating in new residential buildings in Armenia is 185 kWh/m² per year with older buildings having significantly higher needs⁴. One sub-set of buildings with significant energy-savings potential in Armenia is concrete panel buildings, of which there are about 4,300. In such buildings alone, the energy-saving potential from thermal modernisation is over 1.25 TWh/year, with a GHG reduction potential of 250,000 tCO₂ per year, and annual savings of US\$ 63 million (based on the gas and electricity tariffs of 2014).

Energy costs constitute a large share of annual expenses incurred by public buildings. In a survey of educational, municipal and healthcare buildings, 35% of those surveyed stated that electricity bills amount to 11-20% of their total annual spending⁵. Electricity costs were particularly high for educational buildings, where 27% of respondents reported the share of electricity costs to be above 20%. Many schools close down in winter because they cannot provide adequate space heating. When they do operate, they often maintain indoor air temperatures significantly below adequate levels.

Residential buildings and fuel poverty. Poverty levels in Armenia have increased since 2007, which is primarily a result of the energy crisis, caused by high dependence on imported energy, and hikes in prices of household energy. The households in Armenia exhibits high energy expenditures relative to income, which results in fuel poverty. About 32% of the population lives below the poverty line against the average national poverty index.⁶

¹ http://www.nature-ic.am/wp-content/uploads/2013/10/1.Armenias-TNC_2015_ENG.pdf, p. 21

² http://unfccc.int/tclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/19789a07b4de493cb72e43c47fd4db1e.pdf

³ <http://www4.unfccc.int/submissions/INDC/Published%20Documents/Armenia/1/INDC-Armenia.pdf>

⁴ Karner, A., 2013, Mid-term Evaluation of the UNDP-GEF project "Improving Energy Efficiency in Buildings in Armenia (EE Buildings)" PIMS 4245.

⁵ Energy Consumer Survey in Armenia: Residential, Commercial, Public and Industrial Sectors. Advanced Engineering Associates International. September 2006.

⁶ <http://data.worldbank.org/country/armenia>

The World Bank classifies Armenia as a lower middle-income country. In 2014, Gross National Income per capita was US\$ 3,810, slightly above the average of other lower middle-income countries. The adverse impacts of the financial crisis, which hit the Armenian economy hard between 2008-2011, was a key factor in the marked increase in the level of poverty in the country, reaching 26.8% in 2011.⁷ The Human Development Index is 0.729 (87th in global rankings).

High energy expenditures relative to income result in energy poverty. Rising fuel costs and the need for investments in new energy assets and rehabilitation of existing assets will increase the cost of providing electricity. Thus, households currently facing energy poverty are likely to continue to experience significant pressures on their budgets as energy tariffs continue to rise. On average, Armenian households spend about 8% of their budget on energy, with slightly more than half of this on gas.⁸ In 2010, there was a tariff increase on gas imports from Russia which led to a nearly 40% increase in the retail gas price for residential consumers. In an analysis of the impacts of this increase, the World Bank estimates that it led to an additional 1.9% of Armenian households being classified as poor. The increase in gas price also led to an increase in the proportion of households using fuelwood for heating, which served to increase indoor air pollution. Rising fuel costs and the need for investments in new energy assets and rehabilitation of existing assets will increase the cost of providing electricity. Thus, households currently facing fuel poverty are likely to continue to experience significant pressures on their budgets as energy tariffs continue to rise.

Due to widespread poverty and inequality prevalent across urban areas in Armenia, at least one-fifth of households are not able to afford the upfront costs of energy efficiency retrofits. The project directly targets these groups through focused subsidies to help address the affordability gap and stimulate the demand for energy efficiency retrofits.

A decision on 17 June 2015 by the Public Services Regulatory Commission to raise electricity prices by 17-22% led to protests in Yerevan and other cities. The extensive unrest demonstrates the significance of fuel poverty and has raised the issue to the top of the Government's agenda.

Public buildings. Energy costs constitute a large share of annual expenses incurred by public buildings. The Government of Armenia and municipalities are fiscally constrained in terms of available budgets necessary to invest in public building energy efficiency retrofits. While some local banks provide credit lines for building energy efficiency investments, there is an overall lack of depth and history in the local capital market for finance products in energy efficiency building retrofit finance for the range of potential stakeholders, including single-dwelling residential, multi-owner apartments and public buildings.

Armenia's Third National Communication to the UNFCCC (2015)⁹ provides an up-to-date overview of policies and measures for mitigation of GHG emissions in the country. It identifies public, residential and commercial buildings among the country's top priorities for climate change mitigation.

Improving energy efficiency in the building sector has been assigned a high priority in Armenia's climate, energy and housing strategies. In particular, achieving thermal modernization through energy efficiency retrofits is outlined as a national development priority, particularly for multi-apartment buildings. This is particularly clear in the provisions of the National Energy Efficiency Programme (2007), the National Security Strategy (2007), the Concept for Ensuring Energy Security (2013) and the Energy Security Strategy Action Plan (2014), which all identify the energy efficiency potential for the buildings sector and provide outlines of technical measures / solutions to be taken. In addition, the Covenant of Mayors (a 17-city joint agreement) outlines building energy efficiency goals. Recently UNDP supported the Yerevan Municipality in developing the sustainable Energy Action Plan, which was approved by the City Council on 14 of June 2016 and the building sector is addressed. Since 2004, Armenia has been involved in the European Neighbourhood Policy (ENP). The ENP Action Plan was approved in 2006 and is supporting the harmonisation of Armenian legislation, norms and standards with EU energy efficiency criteria.

Policy dimension. The general legal-regulatory framework governing energy efficiency in buildings in Armenia was reviewed in 2013 in the report, 'Results of Analysis and Recommendations for

⁷ ibid

⁸ World Bank (2012). *Poverty and Distribution Impact of Gas Price Hike in Armenia*: <https://openknowledge.worldbank.org/bitstream/handle/10986/11988/WPS6150.pdf?sequence=1>

⁹http://www.nature-ic.am/wp-content/uploads/2013/10/1.Armenias-TNC_2015_ENG.pdf, p. 21

Overcoming Barriers to Increased Energy Efficiency in Residential Buildings: Strategy Report', which was one of the outputs of the EBRD's 'Armenia - Improving Energy Efficiency in Residential Buildings' Programme. The legal-regulatory framework includes the cross-cutting framework governing energy efficiency in buildings, as well as legislation on construction. In addition, the National Programme on Renewable Energy and Energy Efficiency identifies the sectors with the largest energy efficiency potential and proposes 16 categories of energy efficiency measures to be taken to reduce energy use, which includes the building sector¹⁰.

Analysis of the World Bank RISE indicators¹¹ shows that while Armenia has made good progress towards establishing an enabling environment for investment in energy efficiency, there is still much room for improvement in the areas of planning and of policies and regulations in the buildings sector.

A number of initiatives have targeted energy efficiency retrofits in Armenia, but none of them offer targeted finance for building-level retrofits of multi-owner residential buildings. Furthermore, while there are several commercial banks with energy efficiency lending portfolios for SMEs and individual entrepreneurs, the building retrofit sector has not been addressed due to its perceived high risks, such as risks associated with collective decision-making / payment enforcement for multi-owner apartment buildings (detailed analysis of barriers to energy efficiency investment in buildings in Armenia is provided in Section 1.2).

Alignment with related initiatives. The project is fully consistent with the INDC of Armenia approved by the Government in September 2015. As noted above, the INDC identifies “energy (renewable energy and energy efficiency)” and “urban development (building and construction)” among the main sectors included in the national mitigation contributions. The INDC also identifies “Energy” and “Human Settlements” as being among the most vulnerable sectors to climate change. Further, the INDC emphasises that “the climate change mitigation actions should not reverse the social and economic trends of Armenia, but contribute to the socioeconomic development of the country”, which is precisely what this project intends to achieve in the context of climate change mitigation measures in Armenia’s building sector. Finally, the INDC recognises that the achievement of the national climate change mitigation target will require “the support of adequate (necessary and sufficient) international financial, technological and capacity building assistance”, including from the GCF.

This project will promote application of energy efficiency principles in Armenia through implementation of corresponding policies and practices in line with the identified priorities for low-emission and climate-resilient development, in particular the following:

- The National Programme for Energy Saving and Renewable Energy (2007) prioritises the alignment of state policy on development, and directs finance and credit policy of the country to energy saving and establishing and maintaining an active market structure for energy efficiency benefits and providing an effective mechanism for market participants.
- Two laws governing energy efficiency: The Law of the Republic of Armenia on Energy (2001) and the Law on Energy Saving and Renewable Energy (2004). These laws define the main terms and principles for the energy sector, including ensuring efficient use of energy; ensuring the energy independence of Armenia; and creating new industries and organising new services, implementing targeted national programmes and applying new technologies in order to promote the development of renewable energy and energy saving.

The project and its interventions are strongly aligned with the recently-prepared Government of Armenia 'Energy Efficient Public Buildings and Housing in Armenia NAMA' (2014)¹². This NAMA will promote energy efficiency in public buildings and social housing, with a particular focus on energy efficiency measures in new construction, capital renovation and in management of public buildings. The NAMA will assist the cities of Armenia to meet their commitments to reduce GHG emissions from energy consumption by 20% by 2020. The UNDP-GCF project is specifically designed to support the NAMA in achieving transformational change by targeting the following NAMA objectives:

- Support policy, regulatory, institutional and market transformation, leading to a higher level of energy efficiency of structures and reduced GHG emissions from the building sector.

¹⁰ Detailed overview of governmental policies, legislation and by-laws on energy efficiency in building sector is presented in Section 1.2

¹¹ Armenian RISE Indicators are presented in Annex 8

¹² <http://www4.unfccc.int/sites/nama/SitePages/Country.aspx?CountryId=8>

- Contribute to improved energy performance of public buildings in health, educational, cultural and other sectors, improving comfort levels and cutting public budget allocations for energy bills while improving the overall quality of public services.
- Support the provision of adequate and affordable housing in Armenia using the integrated building design concept, and contribute to reducing the total operational costs of buildings, reducing public costs and costs for the users / clients.
- Contribute to the development objectives of Armenia (environment, economic, and social) related to the construction and building sector.
- Support transformational change to a low-emission development pathway in the longer term.
- Contribute to improving Armenia's energy security.

1.2. Barriers, current government policy to address root causes and threats

Achieving thermal modernisation through energy efficiency retrofits in all building sectors is a national development priority, particularly for multi-apartment buildings. Energy efficiency retrofits are the centrepiece of the first NAMA prepared by the country, and will assist cities of Armenia to meet their commitments to reduce GHG emissions from energy consumption by 20% by 2020. Retrofits also reduce the negative social impact of the rises in energy tariffs – average electricity tariffs for residential customers almost doubled between 2008 and 2014, and natural gas tariffs increased by 2.6 times over the same period – and they prolong the lifetime of the building stock (among numerous other benefits). While achieving thermal modernisation through energy efficiency retrofits in all building sectors is a national priority, more can be done in the policy sphere to encourage investment in such retrofits. In addition to policy barriers, a number of other types of barriers continue to prevent the investment of private sector capital in energy efficiency building retrofits.

Historically, awareness of costs and opportunities related to building energy use has been very low. Compounding this lack of awareness, widespread poverty coupled with energy prices that are still not fully cost-reflective lead to a reduced incentive to invest in energy efficiency. In a vicious circle, the lack of a market for energy efficiency retrofits leads to reluctance on the part of banks to provide loans for such projects, which in turn prevents the market from developing. This lack of a market leads, in turn, to a low capacity of building sector players to implement energy efficiency retrofits.

There are also barriers specific to particular sectors. In the public sector, budgets are managed in ways that do not incentivise building operators to save energy. For instance, municipal energy budgets are reduced when energy efficiency is achieved (since budgets are determined by the previous year's actual expenditures). This reduces the interest of both building managers and the private sector (ESCOs) in pursuing energy efficiency services based on Energy Performance Contracts (EPCs) since the payment allowance reduces public institutions' ability to pay for such services as a result of subsequent budget reductions.

In apartment buildings, piecemeal efforts at renovation by owners of individual apartments can have only limited effects; the greatest potential for energy savings lies in retrofits of buildings as a whole. There are, however, a number of barriers to collective action by the owners of apartments in multi-owner buildings that make such building-level retrofits challenging to achieve without targeted efforts at barrier removal:

- Reluctance by banks to finance such investments – home owner associations may not be bankable entities and the recourse mechanism may be unclear.
- The need for agreement between a large number of owners, which may include absentee landlords with little incentive to invest in energy-saving measures and poor households that are unable to afford the up-front costs.
- Lack of clarity on ownership of, and responsibility for, common areas of buildings.

Due to these policy, financial, market and technical/capacity barriers, the overall investment risk profile of energy efficiency building retrofits is prohibitive in Armenia, deterring private and public investment despite the vast potential for highly cost-effective energy-saving and GHG emission reduction opportunities.

Barriers

Table 1. Key barriers to energy efficiency building retrofits

Barrier type	Description	Sector	Priority
Financial	<i>Insufficient financial resources:</i> many home-owners and public sector entities lack the financial resources necessary to undertake energy efficiency building retrofits without loans. This is a particular challenge in the lower socio-economic groups, which simultaneously are in most need of loans but also represent the least credit-worthy consumers.	All, particularly residential sector	Very high: the upfront investment costs of energy efficiency building retrofits severely restrict the ability of home-owners and public sector entities to make necessary investments. The project will address this directly through piloting incentive measures for low-income households, and working with the Government to create local support measures for energy efficient retrofits in the low-income sector.
	Local commercial banks are reluctant to provide loans for energy efficiency renovation to home-owners or public agencies due to perceived high lending risks.	All, particularly residential sector	Very high: the inability to access finance for energy efficiency building retrofits due to the perceived lending risks restricts the growth of the market. By reducing the risks, improving the financial viability of energy efficiency retrofit projects and increasing the understanding of banks of these risks/opportunities, the entire building sector can be shifted onto a more sustainable, low-emission trajectory.
	Reduced incentives for home-owners and public agencies to look for more energy-efficient solutions due to low energy prices.	All	Medium-high: Energy tariffs are not yet fully cost-reflective. Although average tariffs have increased substantially over the last 10 years, this does not yet provide sufficient incentive to invest in energy efficiency building retrofits, particularly in the public sector where incentives are weaker as building operators often do not pay energy bills.
Financial / institutional	Low incentives for reducing energy bills: public budgets are managed to prioritise short-term concerns. Ownership and operating structure of public buildings and their expenditures (e.g. energy bills) are often paid out of municipal budgets or, for schools and hospitals, through education or hospital boards.	Public	High: There is often little incentive for building operators to save energy, especially when budgets are allocated on an annual basis. There is a need to reallocate incentives to drive investment in energy efficiency retrofits in public buildings.
Policy	Voluntary building codes: Building energy codes for new residential builds are only partially enforced while renovated buildings are not required to meet any building energy codes. There is also no standardised rating system for buildings' energy efficiency.	All	High: there is little incentive for energy efficiency retrofits when building codes do not define the level of energy efficiency required from energy efficiency retrofits. Introduction of building codes for energy efficiency retrofits can drive the demand for private sector investment across all building sectors.
	Enforcement of energy efficiency requirements is low. While a UNDP-GEF energy efficiency buildings project has started to introduce an energy passport programme, enforcement capacity remains low and few energy audits are conducted to determine the actual performance of buildings and their compliance with building codes.	All	Very high: Without audits, there are no readily available data on energy performance in buildings. Without this information, it is not possible to assess code compliance or visibly demonstrate the economic benefits of energy savings (which can help to overcome information barriers for energy efficiency building retrofits).
Legal / Institutional	Weak capacity in multi-owner apartment buildings: building	Multi-owner buildings	High: Multi-owner property and collective decision-making is

Barrier type	Description	Sector	Priority
	management and repair, project development, financial planning and management, fund-raising, human resource management, accounting, reporting and customer relations are weak.		particularly difficult and there is an absence of appropriate, and enforced, secondary legislation. The inability of building owners to collectively decide upon investments restricts energy efficiency retrofit market potential.
	Inflexible investment decision-making practices: first-cost procurement practices, whereby decisions on retrofit/renovation projects are made on the basis of initial construction costs instead of life-cycle costs, discriminate against efficient building retrofits, which may have higher up-front costs but which have lower operating costs.	All	Medium-High: This is a significant barrier for state sector construction and retrofits, but since state construction has a limited share of the market, the impact of this barrier on the buildings sector as a whole is limited.
Technical / capacity	Low capacities of building sector players: knowledge and tradition of designing and building energy efficient buildings as well as efficiently operating energy use in buildings is low as there was previously no incentive due to poor enforcement and lack of understanding of the benefits of energy efficiency buildings.	All	Very high: Even if codes are strengthened, compliance will not be possible without architects and builders who can design more efficient, code-compliant buildings.
Information / awareness	Energy efficiency is not fully evaluated and recognised for most people in Armenia. There is a low level of awareness among building owners, the absence of building certification practice the real estate agencies and occupants are not aware on operational costs and potential energy and money saving opportunities. There is also a misinformed perception that full compliance with efficient building codes and energy-efficient buildings would be prohibitively expensive in Armenia.	All	Medium-High: While improved codes will mandate increased efficiency, this perception could keep architects and builders (and buyers in the absence of building energy performance rating standards) from considering buildings that exceed the energy performance requirements in the code and moving the market forward.
	Immature market for energy efficiency products and services: outdated technologies and inefficient materials in use by a large number of construction and maintenance companies.	All	High: Current construction practices directly influence the performance of building stock, but they ultimately stem from a lack of an efficient building code, lack of efficient design capacity, and low levels of information on materials performance.
	Immature market for energy efficiency products and services: out-dated technologies and inefficient materials in use by a large number of construction and maintenance companies.	All	High: An existing UNDP project has started to put in place a system of testing and certifying construction materials and performance requirements. However, broadening the adoption of this practice and strengthening enforcement are required.
	Construction materials are not certified for energy performance.	All	High: Uncertified materials will make it very difficult for architects and builders to ensure that their buildings are code-compliant and attain desired energy performance.

Overview of existing Government policy

Armenia's Third National Communication to the UNFCCC was published in 2015 and provides an up-to-date overview of policies and measures for mitigation of GHG emissions in the country. It identifies

buildings as a priority sector for national mitigation actions. Armenia's UNFCCC TNA¹³ identified heat supply to buildings as one of the main sources of GHG emissions and as having a large potential for energy saving and emission reduction. The draft INDC also recognises the need for addressing efficiency in buildings.

Energy efficiency principles are governed in Armenia through the provisions of the *National Energy Efficiency Programme* (2007), the *Concept for Ensuring Energy Security* (2013) and the *Energy Security Strategy Action Plan* (2014), which identify the energy efficiency potential for the buildings sector and provide outlines of technical measures/solutions to be taken; building energy efficiency goals are also outlined in the Covenant of Mayors (a 17-city joint agreement).

1.3. Related initiatives

The Armenian Government continues to work actively with development partners such as UNDP, the World Bank, the EBRD, USAID and other donors on energy efficiency programmes to improve energy efficiency in buildings. However, existing building energy efficiency projects have targeted new builds, energy efficiency retrofits mainly in public sector buildings, while residential, commercial, and industrial retrofits have been largely overlooked due to the high levels of financial risk they pose. The potential for energy efficiency retrofits in these buildings is particularly high, especially panel buildings. Furthermore, while there are several commercial banks with energy efficiency lending portfolios for SMEs and individual entrepreneurs, the building retrofit sector has not been addressed due to its perceived high risks, such as risks associated with collective decision-making / payment enforcement for multi-owner apartment buildings.

In terms of activities specifically focused on energy efficiency buildings renovation, the World Bank (through different Project Implementation Units and the R2E2 Fund) finances renovation in the public sector. Other FIs (EBRD, AFD, IFC, GGF, KfW) are implementing or planning to implement credit facilities for the residential sector, predominantly through participating banks / credit institutions, and offering energy efficiency loans for household energy efficiency retrofits. However, none of these institutions offers residential energy efficiency financing for building-level solutions that would enable home owner associations of the owners of apartments in multi-apartment buildings to obtain financing for a retrofit of the building as a whole. Such building-level retrofits can achieve much higher energy savings than those that are feasible through the individual actions of single apartment owners.

¹³ Ministry of Nature Protection of the Republic of Armenia, 2003, Armenia - Country Study on Climate Change. Phase II. Downloaded from:

http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/19789a07b4de493cb72e43c47fd4db1e.pdf

2. STRATEGY

2.1. Project objective

Objective

To scale-up investment in energy efficiency building retrofits in Armenia, and reduce the overall investment risk profile of energy efficiency building retrofits to encourage private sector investment and reduce fuel poverty.

The project will create a favourable market environment and scalable business model for investment in energy efficiency retrofits, leading to sizeable energy savings and accompanying GHG emissions (between 4.4 and 5.2 million tCO₂ over the 20-year lifetime of the investments); green job creation and poverty reduction. It will also catalyse additional private and public sector financing of approximately US\$ 100 million.

Overview

The project is designed to address market barriers to energy efficient building renovation via a combination of policy and financial de-risking instruments and targeted financial incentives to key market players, such as building owners and energy service companies (ESCOs). By targeting policy, financial, market and technical/capacity barriers, the project will significantly scale-up investment in energy efficiency building retrofits in Armenia, and reduce the overall investment risk profile of energy efficiency building retrofits to encourage private sector investment.

The project is aligned with the GCF investment framework and proposed regional prioritisation scheme, which emphasises the significant potential in Eastern Europe for retrofitting and upgrading existing infrastructure, and for supporting efforts to strengthen urban systems.

The project builds on and leverages UNDP's extensive experience supporting the Government of Armenia and successfully engaging the private sector in reducing the barriers for energy efficiency in heating, building and lighting sectors: the development and enactment of national energy efficiency building codes and energy audits (for new and existing building stock); the elaboration of national / sectoral / local energy efficiency actions plans and accompanying MRV systems; and de-risking approaches for low-carbon investment using UNDP's successful framework approach to de-risking investment in energy efficiency (see **Error! Reference source not found.**).

UNDP will work with Government and private sector stakeholders, including international financial institutions, to systematically identify the most cost-effective policy, financial, market and technical/capacity de-risking measures with the aim of achieving a risk-return profile for energy efficiency building retrofits that can attract investments, including from national budgets, commercial banks and other private sector stakeholders such as ESCOs.

2.2. Project Components, Outcomes and Outputs

Investments in energy efficiency building retrofits face different risks and barriers for each building category. The principal building categories distinguished and targeted in this project will be public buildings (schools, hospitals, municipal/Government offices) and, in the residential sector, individual houses and multi-owner apartment buildings. For each targeted building stock, a package of relevant policy and financial de-risking instruments will be identified and implemented to address the specific circumstances and barriers in the country and in the targeted building sub-sector. This specificity will create an easily-scalable model for subsequent replication of energy efficiency retrofits and market growth.

The activities of the project will be structured under four components:

- Component 1 – Establishment of building sector MRV and knowledge management
- Component 2 – Policy de-risking
- Component 3 – Financial de-risking
- Component 4 – Financial incentives.

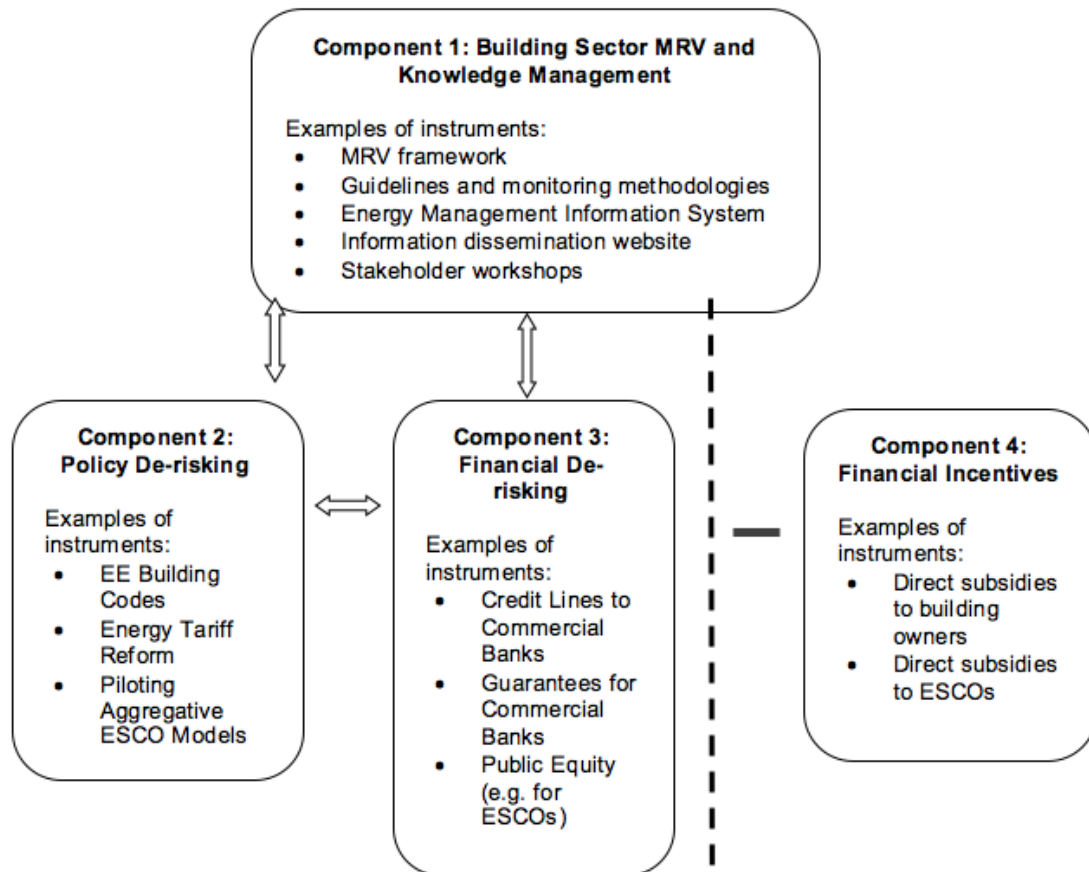


Figure 1. De-risking approach for energy efficiency building retrofits

Component 1 – Establishment of building sector MRV and knowledge management

Component 1 aims to establish robust MRV for the building sector to enable monitoring of energy use in buildings, prioritisation of buildings for energy efficiency retrofits, and quantification and monetisation of the resulting energy savings. Robust MRV is necessary to build the investment case for energy efficiency retrofits.

The project will support the development of an MRV framework, including guidelines and methodologies and building on UNDP’s extensive experience with establishing Energy Management Information Systems (EMIS)¹⁴ for buildings.¹⁵ The project will then disseminate information on the cost-saving potential of energy efficiency retrofits to commercial banks and potential borrowers via the project website and stakeholder workshops.

The common set of strategic and powerful metrics for measuring results will be critical, both to communicating broadly on the financial and development gains to be made from energy efficiency investments, and to mobilising additional resources and support.

The project will contribute to the creation of knowledge and collective learning processes through promoting better information dissemination to stakeholders, including the private sector, and sharing lessons learned.

¹⁴ An Energy Management Information System (EMIS) refers to a computer-based system for collecting, storing and analysing information on the energy performance of the monitored objects. Energy use data for individual objects (buildings) can be aggregated and monitored at sectoral, regional and national level, depending on the eventual set-up of the system.

¹⁵ UNDP first piloted and scaled-up EMIS in public sector in Croatia, where the project freed up US\$ 18 million of public budget annually.

The potential role of women in implementation of Component 1 is significant. Women can be agents of change in creating awareness on the benefits of EE investments. According to the Armenia Country Gender Assessment (July 2015) of the Asian Development Bank, many women are interested in energy-efficient and renewable energy projects, and know examples of pilot projects that they thought successful¹⁶. Indicators of women participation in this area will be monitored during implementation.

The desired outcome of Component 1 is Outcome 1: Robust MRV of GHG emissions from the building sector established.

The outputs and activities that will contribute to achieving this outcome are described below.

Output 1.1 MRV systems for the buildings sector in Armenia established

Under Component 1, technical assistance will be provided to market stakeholders in order to undertake MRV and report on energy savings. This technical assistance will include the following Activities:

- 1.1.1 Development of the MRV framework, including guidelines and monitoring methodologies for the various categories of buildings.
- 1.1.2 Support to full implementation of building EMIS in selected buildings for demonstration and capacity building purposes.

Output 1.2 Knowledge management and MRV Information disseminated

Dissemination of information, including that gained from EMIS for buildings, will help to establish the business case for energy efficiency building retrofits.

An effective communication and dissemination strategy is critically important to scaling-up activities beyond those that will be part of this project. The project will consult both men and women on the type of information needs during scoping.

The knowledge management plan will be detailed at project inception, according to local context and the experience of project managers and other contributors. A communication and dissemination strategy will be developed (based on scoping, consultation with local stakeholders, understanding the baseline of awareness and the types of information needs) and will include the following Activities:

- 1.2.1 Identify appropriate formats for reaching the relevant stakeholders:
- 1.2.2 Establish a website that will provide information and a platform for communication between the different stakeholders, thus enhancing cooperation and learning through the exchange of knowledge and skills.
- 1.2.3 Information dissemination to maximize the impact potential of the project in Armenia and beyond. Formats for information dissemination will be developed based on their likely effectiveness for raising awareness, facilitating information access and providing actionable guidance and support to the sector.
- 1.2.4 Provision of information to consumers: Economically attractive measures for energy efficiency are often left un-implemented because stakeholders are simply unaware that such measures exist. If they are aware, they may have unreliable information. Hence, the availability of information on energy efficiency and opportunities for savings is an important precondition to enabling them to act on these opportunities.

Component 2 – Policy de-risking

The policy de-risking component will support national, sub-national and local authorities to adopt and implement an enabling policy framework for energy efficiency retrofits. De-risking instruments will directly and indirectly address investment risks for commercial lenders of energy efficiency retrofit finance.

This Component will support on-going legal reform in the field of energy efficiency. It will also support the gradual introduction of binding legislation on energy auditing, energy passports/certificates and labelling for existing buildings. This work will leverage the results of the UNDP-implemented, GEF-financed “Improving Energy Efficiency in Buildings”¹⁷ project. Policy de-risking tools will include: the

¹⁶ <http://www.adb.org/sites/default/files/institutional-document/162152/arm-country-gender-assessment.pdf>

¹⁷ https://www.thegef.org/gef/project_detail?projID=3935

modernisation and enforcement of energy efficiency standards and mandatory energy performance standards for retrofitted buildings, as well as monitoring and enforcement of associated construction norms and standards; the development, introduction and enforcement of adequate secondary legislation for providing a clear and effective set of functional models and a standard set of rules for all multi-apartment building management bodies to undertake energy efficiency retrofits; the implementation and improvement of existing legislation and formulation of secondary legislation that will assist the management of energy efficiency building retrofits for different types of building; and assistance to residents and common-share building organisations on collective decision-making on the complex issues of energy efficiency retrofit investment.

Output 2.1 Public instruments for the promotion of investment in energy efficiency selected

Activities will include:

- 2.1.1: Support to policy-makers in selecting public instruments using UNDP's de-risking framework to promote sustainable energy investment in developing countries¹⁸.

Output 2.2 Support provided to on-going legal reform in the field of energy efficiency

Technical assistance on legislative reform, including binding legislation on building codes, adequate secondary legislation on multi-owner building management, and retained savings in public buildings.

Activities will include:

- 2.2.1 Support to national, sub-national and local authorities to adopt and implement an enabling policy framework for energy efficiency retrofits. In view of the recommendations developed in Activity 2.1.1, and if needed, support will be provided for the adoption of additional by-laws applicable to building retrofits. Adoption and enforcement of the new Building Code to building retrofits will be ensured.
- 2.2.2 Support to the gradual introduction, according to an explicit and transparent timetable, of binding legislation on energy auditing, energy passports/certificates and labelling for existing buildings.
- 2.2.3. Support to the introduction of legislation specific to public buildings' energy efficiency retrofits, including required amendments in the public procurement rules.

Output 2.3 Support provided for the creation of an enabling policy framework for energy efficiency retrofits in multi-owner residential buildings: Home Owner Association (HOA) legal status, payment enforcement, professional management, consensus levels

The project will support the development, introduction and enforcement of adequate secondary legislation to provide a clear and effective set of functional models and a standard set of rules for multi-owner building management bodies to undertake energy efficiency retrofits.

Activities will include:

- 2.3.1 Support to policy-makers in developing policy relating to HOA legal status, payment enforcement, professional management and consensus levels:

Output 2.4 Support provided to building owners / managers / owner associations / ESCOs on legal matters related to energy efficiency retrofit projects

The absence of business models for repayment of energy efficiency investments is considered the major barrier to private sector investment in energy efficiency retrofits in the public and residential sectors. The project will roll-out aggregative models for energy efficiency retrofits through the private sector, such as through ESCOs and through innovative legal structures for owner associations in multi-owner buildings. Private sector entities or PPPs (such as ESCOs) will be supported in establishing robust repayment schemes for their services (through, for example, legal and financial advice on structuring EPCs with building owners/owners' associations).

The main Activities under this Output will be:

- 2.4.1 Provide support on legal matters related to energy efficiency retrofit projects for multi-owner buildings:

¹⁸ Waissbein, O., Glemarec, Y. et al. (2013). *De-risking Renewable Energy Investment. A Framework to Support Policymakers in Selecting Public Instruments to Promote Renewable Energy Investment in Developing Countries*. New York, NY: United Nations Development Programme

2.4.2 Provide support for establishing ESCOs: Current energy efficiency legislation does not fully support the ESCO modality and there are no fully operating energy service companies in Armenia¹⁹. An example of an ESCO-type arrangement that is currently being set up in Yerevan with UNDP support is the special account (fund) that will receive funds from savings generated by investments in energy efficiency lighting improvements and will use these funds for further target financing of new energy efficiency projects. Lessons will be learned from the operation of this fund, and the possibility of setting up a similar fund for energy efficiency building retrofits will be examined. Ultimately, the project aims to introduce the ESCO model, where appropriate, to Armenia in partnership with existing building sector stakeholders, public and private companies providing energy efficiency services and/or building management services.

Output 2.5 Exit strategy measures implemented

The GCF project will overcome systemic barriers to energy efficient retrofits of public and residential buildings in Armenia and this catalyse impacts beyond the end of GCF's funding. The approach taken of policy and financial de-risking will provide a lasting impact and lies at the heart of the project's exit strategy as outlined in section 4.4 (section D.2. of the GCF Funding Proposal). Furthermore, the financial incentives for public buildings are to address first-mover barriers, but since investments in energy retrofits in public buildings are generally already financially viable further incentives are not likely to be needed. On the other hand for residential buildings where financial viability is not the main driver of building renovation, and where household poverty is a significant barrier, ongoing funding, targeted at poor households is likely to be needed beyond the end of the project. The strategy of working via the existing social support mechanisms aims to ensure that ownership of this support shifts to internal Armenian social security funding.

All these core elements supporting long-term sustainability have been built into the project design. Nevertheless, since the duration of the project is 6 years and not all needs can be fully anticipated at this stage, this output has been included to take into account any remaining needs for the creation of a sustainable market.

The Activity that will contribute to achieving this Output is:

2.5.1: Development and implementation of the exit strategy: Arrangements providing for long-term and financially sustainable continuation of project outcomes and results beyond completion of the project will be identified, discussed with stakeholders and implemented before the end of the project's lifetime.

Component 3 – Financial de-risking

The financial de-risking component will work in partnership with the EIB, the R2E2 Fund, local commercial (private sector) banks, and other relevant national and international financial institutions to provide access to affordable capital for energy efficiency retrofits. These de-risking instruments will take several forms, including credit lines from financial institutions and/or loan guarantees to stimulate local commercial banks to lend to private ESCOs and/or building owners. Where existing lending rates are prohibitive (current commercial lending rates are around 22% per year, with repayment periods of 5 years), such loans may be at concessional rates. UNDP has undertaken regular discussions with the EIB on the provision of soft loans for public and residential energy efficiency retrofits; the EIB is negotiating with the Government on provision of soft loans. The EIB and Government agreements will form the basis of provision of commercial loans by EIB for energy efficiency building retrofits in Armenia (commercial terms to be agreed during project implementation based on prevailing market conditions and needs). For these loans to be taken up successfully, GCF finance for the other Outputs and Components of the project is critical. In this Component, technical assistance will also be supplied to local commercial banks to develop their products, appraise investments and develop a pipeline of projects. Finally, information will be disseminated to market stakeholders on the availability of energy efficiency building retrofit finance packages on a project website. Building retrofits will be performed by competitively-selected private sector engineering companies. Activities will be implemented / supported by private sector consulting companies and individual experts.

¹⁹ *Final Report: Energy Efficiency Orbits for Transition Economies*, Prepared for: Copenhagen Centre on Energy Efficiency (C2E2), 2015.

The desired outcome of Component 3 is Outcome 3: Access to affordable capital for energy efficiency retrofits provided.

The Outputs that will contribute to achieving this Outcome are described below.

Output 3.1 Technical assistance provided to banks and other financial institutions for market facilitation for individual residences

The Activity that will contribute to achieving this Output is:

- 3.1.1 Provide support to banks to develop and market products for energy efficiency in individual residences. This will include training and knowledge transfer for banks on appraising investments (including risk assessment) and developing a pipeline of projects. The project will require banks to include female professionals in training on appraising investments (including risk assessment) and developing pipeline projects. The project will also encourage the identification and invitation of women heads of HOAs, or members, to be involved in developing lending products.

Output 3.2 Technical assistance provided to banks for HOA market facilitation

Since there is no real market for lending to HOAs in Armenia, technical support will be offered for establishing standard operating procedures for banks' introduction of credit offerings for multi-owner buildings, and an in-depth package of support will be provided for developing lending products for HOAs. The project will also work with Housing Management Companies (HMCs) and installers/suppliers who can act as facilitators for connecting HOAs with lending products. The focus will be on developing lending to existing HOAs and not on developing new HOAs.

Activities that will contribute to achieving this Output are:

- 3.2.1 Support to development of bank products for HOAs

Output 3.3 Technical assistance provided to local government to develop energy efficiency retrofit projects for publicly-owned buildings

Activity that will contribute to achieving this Output is:

- 3.3.1 Support to the process of identification, development and aggregation of technically- and financially-feasible energy efficiency retrofit projects in publicly-owned buildings. Since energy costs constitute a large share of annual expenses incurred by public buildings²⁰, those managing such buildings will be strongly motivated to invest in energy efficiency retrofits given information on the technical possibilities and financing options.

The model for the mechanism that will support such projects is the special purpose fund for improving energy efficiency of lighting systems in Yerevan city Municipality. This fund is being set up as one of the outputs of the UNDP-GEF "Green Urban Lighting" project.

Output 3.4 Access to affordable capital for energy efficiency retrofits provided

GCF funding for the other Outputs and Components will be critical in terms of the needed technical assistance and capacity building for the financial institutions to step in and the loans to be successfully taken up. UNDP will partner with national and international financial institutions, which may then, in turn, offer financial de-risking instruments such as credit lines, loan guarantees and public equity for investments in EE building retrofits to local financial institutions such as banks and credit organizations.

To be clear, a GCF contribution in the form of loans, equity or guarantees is not being requested for these financial de-risking instruments. Instead, these financial de-risking instruments will be wholly funded by UNDP's partner financial institutions as co-financing.

Activities will include:

- 3.4.1 Establishment and maintenance of the technical structure for the financial de-risking instruments offered.

²⁰ The C2E2 report referred to in footnote 9, p. 47, states that: "In a survey of educational, municipal, and healthcare buildings, 35% of those surveyed admitted that electricity bills amount to 11-20% of their total annual spending. Electricity costs were particularly high for educational buildings, where 38% of respondents reported their electricity bills at 11-20% of the total annual spending, whereas 27% of respondents reported the share of electricity costs above 20%. Many schools close down in winter, because they cannot provide adequate space heating. When they do operate, they often maintain indoor air temperatures way below adequate levels." Schools often operate at less than 8 °C.

3.4.2 Verification of funded investments.

Output 3.5 Marketing platform created

Develop marketing materials and a common brand / market platform on the advantages of energy efficiency retrofits, including publicising the results and the availability of energy efficiency building retrofit finance packages.

The Activity that will contribute to achieving this Output is:

- 3.5.1 Provide marketing support to banks (including SEF International, ACBA Bank, Ameria, Byblos Bank, Ararat Bank, and Ineco Bank²¹):

Component 4 – Financial incentives

Targeted financial incentives will be provided and offered to building / apartment owners, or the ESCOs serving these clients, to ensure that the most vulnerable households can afford the costs of energy efficiency retrofits. The financial analysis shows that, for those earning less than the median household income of US\$ 400 per month, building retrofits are not affordable. Despite the fact that, ultimately, the retrofits will reduce energy bills, such households will not be able to afford the upfront costs of energy efficiency retrofits and, therefore, targeted incentives to vulnerable groups are required to help address the affordability gap and stimulate the demand for these retrofits. Such incentives are common even in developed countries – both in the EU and in the USA, sizeable grants are common practice. The Project will support poor and vulnerable households to allow them access to improved thermal comfort and cost / energy savings.

Output 4.1 Targeted financial incentives provided to vulnerable groups to help address the affordability gap

The Activity that will contribute to achieving this Output is:

- 4.1.1 Targeted financial incentives provided to building / apartment owners, or the ESCOs serving these clients. The incentives will initially come from GCF, but during the course of the project, as a result of the policy work under output 2.1, will increasingly be replaced by local incentives.

2.3. Financial Elements of the Project

Financing structure

The table below describes the financial structure of the project.

Proposed financial structure

Component	Financiers	Required financing (MUSD)
Investment	GCF	14.000
	Yerevan Municipality	8.000
	Sub-total	22.000
Technical Assistance	GCF	6.000
	UNDP	1.420
	MoNP	0.400
	Sub-total	7.820
Total Project Cost		29.820

Currency Hedging Mechanism: UNDP's currency hedging mechanism is based on matching cash flows (i.e. revenues and expenses) in non-US\$ currencies and bank account balances are targeted not to exceed approximately one month's disbursement requirements to minimise risk.

²¹ There are 6 local banks in Armenia that already offer financing for EE projects in collaboration with various IFIs (outside of the building sector), namely SEF International, ACBA Bank, Ameria, Byblos Bank, Ararat Bank and Ineco Bank. These banks will be the first ones to be targeted to receive technical assistance from the project for design of EE financing products for the residential building sector. Other interested banks, including from the list of EIB's financial intermediaries in Armenia, will also be invited through the open call for expression of interest.

Description of how the choice of financial instrument will overcome barriers, achieve project objectives and leverage of additional public and/or private finance

The Project will leverage a sizeable volume of additional resources. To maximize this potential, UNDP is working closely with the EIB on securing concessional loan for public and residential sector, and through its partnership with the EIB, the involvement of private sector actors, and funding from the Government and UNDP. Overall, US\$ 20 million of GCF financing is expected to leverage US\$ 80 million of private investment and US\$ 20 million of public investment in energy efficiency retrofits.

For technical assistance (Components 1, 2 and 3, and for Project Management) the requested GCF funding is US\$ 6 million to remove market and policy barriers to EE building retrofits, and the co-financing will be provided by the Ministry of Nature Protection in the amount of US\$ 0.4 million and the accredited entity, UNDP - US\$ 1.42 million.

For investment (Component 4), GCF financing in the amount of US\$ 14 million is being requested to address the needs of vulnerable households and remove financial barriers by making loans for EE building retrofits more affordable.²² This will be complemented by US\$8 million in co-financing from the Municipality of Yerevan.

In Component 4, grants from the GCF will be given as a temporary targeted incentive. The grants will be targeted in that they will address the needs of the most vulnerable households. The financial analysis (Annex 16) shows that, for those earning below the median household income of US\$400 per month, building retrofits are not affordable. For middle- and higher-income households, grants are not needed from an affordability point of view and will only be used at a low level to overcome early-mover barriers. The grants will support poor and vulnerable households to allow them access to improved thermal comfort and cost / energy savings. Incentive grants for low-income households are also needed to unlock building-level investments, as these households might otherwise block building-level investment decisions in multi-apartment buildings. A total of US\$ 12.5 million in incentive grants will be used to support vulnerable households in the residential sector.

In the public sector, a small incentive (totalling around US\$ 1.5 million) is needed to provide necessary stimulus to support higher energy efficiency standards than required under 'business as usual'. Also, the market and lending will likely increase much more rapidly with a small grant (up to 5% of investment cost) to incentivise first movers amongst municipalities. The funds will be applied as a grant towards the financing of measure alongside potential lending from EIB and cash investment from the municipality. In addition, the modest incentive will also serve to accelerate the renovation of buildings, thus improving the quality of life of households using public facilities such as hospitals and kindergartens servicing the population.

²² The US\$ 20 million GCF budget total includes project management costs but excludes the fee of the GCF Accredited Entity (see Section B.3). While not included in this proposal on the instructions by the GCF Secretariat, an additional cost of 9% of the value of the GCF project budget will be necessary to cover quality assurance and oversight services performed by UNDP as a GCF Accredited Entity over all phases of the project cycle. This includes: (i) oversight of proposal development; (ii) appraisal (pre- and final) and oversight of project start-up; (iii) supervision and oversight of project implementation; and (iv) oversee project closure. UNDP awaits confirmation from the GCF Board on this matter and expects that the AE fee, over and above the project cost, will be approved by the GCF Board prior to implementation.

3. RESULTS AND PARTNERSHIPS

3.1. Expected results

The Project will achieve high GHG emission reductions from improved energy efficiency and lower energy-intensity buildings. Based on experience and evidence from energy audits of UNDP's pilot project in Yerevan²³, up to 60% of energy consumption / GHG emissions in buildings can be reduced cost-effectively:

- Total tonnes of direct CO₂eq reduced per annum: an estimated 69,484 tCO₂ per year or 1.4 million tCO₂ over the 20-year lifetime of the energy efficiency interventions.
- Including direct and estimated indirect emission savings, a total of 5.6 to 5.8 million tCO₂ over the 20-year lifetime of the energy efficiency interventions will be achieved.
- Expected total number of direct beneficiaries: 210,000.

The overall impacts of the GCF project have been estimated using the data from the technical and financial analysis (presented in section 4.5 and Annex 16. The overall impacts are summarised in the Table 2. below.

Table 2. The Project impacts summary

Building type	Average cost per retrofit (US\$)	Average level of grant (%)	Energy savings (GWh/year)	GHG savings (tCO ₂ eq/year)	Number of buildings	Total amount of grant (US\$)	Total investment (US\$)	Lifetime GHG savings (CO ₂ eq, 20 years)
Single-family individual buildings	10,000	9%	110.3	27,239	6,000	5,400,000	60,000,000	544,783
Multi-family apartment buildings	120,000	22%	93.1	22,997	290	7,656,000	34,800,000	459,942
Public buildings (large, such as hospitals)	250,000	5%	7.7	5,005	23	287,500	5,750,000	100,093
Public buildings (small, such as schools)	95,000	8%	53.2	14,243	150	1,140,000	14,250,000	284,860
Total			264.3	69,484	6,463	14,483,500	114,800,000	1,389,677

Expected total number of direct and indirect beneficiaries (reduced vulnerability or increased resilience)

Direct beneficiaries of the project (who continue to benefit after the project for the lifetime of the investments) are calculated using an average household size of 5, and an average number of dwellings per apartment building of 36²⁴. For public buildings, beneficiaries are taken as the average number of permanent building residents. For a hospital, this is the hospital staff, not the number of short-term users (patients).

Expected contributions to global low-carbon and/or climate-resilient development pathways through a theory of change for scaling up and replication

The paradigm shift potential for the proposed project lies in the project's focus on the private sector as the driving force for investment and implementation of energy efficiency retrofits, as opposed to current

²³ In 2013-2014, UNDP, with GEF financial support, implemented the first large-scale thermal modernization project in the Republic of Armenia in a typical panel multi-apartment residential building in Yerevan. Full results of the project, including technical, economic and environmental feasibility, are presented in Annex 16 to this proposal. In addition, the results of a social survey of the residents are available in 'Energy Audit in the multi-apartment building #2 Mush-2 district, Gyumri, Republic of Armenia (2012) by Artur Tsughunyan and Tigran Sekoyan).

²⁴ These assumptions are based on the characteristics of the pilot building in Yerevan, which is a typical multi-apartment residential building in Armenia (i.e, there are 4,300 similar buildings across the country).

models which are primarily based on (scarce) public finance and lack repayment mechanisms (i.e. accumulated energy savings are not monetised and stay with building owners). The project will lead to a paradigm shift in the perception of investment in energy efficiency retrofits by investors, which are currently viewed as too risky and unattractive for private sector.

The project's results chain is based on UNDP's approach to market transformation for energy efficiency. This approach is based on the fact that, due to the high upfront capital intensity of energy efficient investments, access to large quantities of low-cost financing is critical to cost-effectively transform energy efficient markets. The main elements of the theory of change are support to governments to put together public instrument packages that: (i) address the non-financial barriers that block demand for investment; and (ii) create attractive risk-return profiles by reducing, transferring or compensating for risk.

3.2. Partnership and Stakeholder Engagement

Summary of stakeholder consultations

UNDP has established long-standing and on-going stakeholder consultations with a variety of stakeholders, including Government agencies, NGOs and other development agencies and potential project beneficiaries. Stakeholder consultations during the preparation of the project included one-on-one meetings. Government agencies have been made aware of, and have engaged in, on-going discussions regarding the energy efficiency building retrofit project through activities associated with UNDP's existing energy efficiency buildings and energy efficiency lighting project activities and the well-established UNDP Climate Change Programme Unit coordinated by and located at the Ministry of Nature Protection. Other Government agencies engaged regarding the energy efficiency retrofit project include the Ministry of Urban Development (currently Committee), the Ministry of Territorial Administration and Development, the Ministry of Economic Development and Investment, the National Institute of Standards, the R2E2 Fund, the Scientific Research Institute of Energy, and the Yerevan State University of Architecture and Construction.

Civil society organisations engaged with UNDP's on-going energy efficiency buildings project that were also consulted through one-on-one meetings included the Builders' Union of Armenia and the Architects' Union of Armenia, the Foundation to Save Energy, the Development Solutions Institute Foundation, Third Nature, the Habitat for Humanity Armenia foundation and the National Social Housing Association foundation. Informal discussions were also held with potential project beneficiaries identified through engagements with UNDP's on-going activities in Armenia.

Institutional framework

Table 3. Government agencies with an energy efficiency policy mandate

Ministry	Responsibility
National Government	Responsible for the enforcement of legislation, including energy saving and energy efficiency regulations
Ministry of Energy Infrastructure and Natural Resources	Addresses a wide range of strategic goals, including energy efficiency, through the implementation of national projects, programmes and drafting legislation.
State Urban Development Committee	Regulates construction activities, including insulation and building energy efficiency standards. Design and enforcement of building codes and standards
Ministry of Nature Protection	Coordinates climate change programmes in the country
National Statistical Service	Responsible for statistical information, including data on fuel and energy consumption, tariffs, buildings' floor space, etc.
National Institute of Standards of the Ministry of Economic Development and Investment	Licenses independent verifiers of certificates and labelling
Renewable Energy and Energy Efficiency Fund (R2E2 Fund)	The Fund was established in accordance with Government Resolution No.799-N dated April 28, 2005. The mission of the Fund is to facilitate investment in the energy sector. It provides comprehensive assistance to project developers, investors, banks, researchers etc. and provides expertise to the government on

Ministry	Responsibility
	issues related to energy. The Fund has also established a revolving fund that finances energy projects through banks or through direct credit contracts.
Public Services Regulatory Commission	Regulates the energy market in Armenia and operates a number of programmes to encourage the effective use of energy resources.

Stakeholders and roles

The Government and private sector stakeholders are outlined in the Table below.

Table 4. Overview of project stakeholders and their proposed engagement in implementation

Stakeholder category	Name	Relevance to Project
Government	Ministry of Nature Protection	Implementing partner for the project and the NDA for the GCF. The Ministry is responsible for the coordination of all climate-related projects and programmes, as well as for monitoring of GHG emissions in line with its mandate.
	State Urban Development Committee, Government Adjunct Body	Recipient of technical assistance to develop and strengthen legislation and secondary legislation associated with energy efficiency buildings and retrofits. Also responsible for the design and enforcement of new building codes and standards, and coordination and supervision of construction/reconstruction of the residential buildings.
	State Urban Inspectorate under the State Urban Development Committee	Recipient of technical assistance to develop and strengthen legislation and secondary legislation associated with energy efficiency buildings and retrofits. In particular, the Inspectorate will benefit from assistance to strengthen its enforcement capabilities.
	Ministry of Energy Infrastructure and Natural Resources	Enforcement of the legal base, methodologies and procedures for the Energy Certification Scheme (Energy Passport).
	National Institute of Standards	Development of procedures for licensing of independent verifiers in the sphere of energy efficiency materials certification and labelling.
	Municipalities and sub-national entities	Provided with capacity strengthening in the area of land use planning and zoning, particularly regarding the integration of energy efficiency building considerations into local decision-making.
Private sector	Commercial Banks such as SEF International, ACBA Bank, Ameria, Byblos Bank, Ararat Bank, Ineco Bank	Recipients of technical assistance to develop financial packages for energy efficiency building retrofits. Will provide financing for energy efficiency building retrofits under various investment programmes.
	ESCOs	Recipients of technical assistance to develop financing packages and to develop a pipeline of bankable energy efficiency retrofit investment opportunities.
	Home-owners / managers / condominiums	Provide a down-payment on energy efficiency building retrofits and contribute to development of a pipeline of bankable energy efficiency retrofit investment opportunities.
	Companies that will be involved in retrofit projects	Companies such as engineering design and construction companies, and suppliers of materials will be the ones actually executing the retrofit projects.
Other organisations in Armenia	Builders' Union of Armenia and Architects' Union of Armenia	Development of advertising materials, exhibitions, support with publications, lobbying for regulatory documents and standards adoption, awareness-raising.
	National Mortgage Company	Will provide financing for energy efficiency building retrofits under various investment programmes, particularly under loan agreement with KfW.
	Universities	Support lessons learning activities and conduct formal academic teaching.
	NGOs	Awareness-raising activities: A range of NGOs, including the Foundation to Save Energy, the Development Solutions Institute Foundation, Third Nature, the Green Union, the Habitat For Humanity Armenia foundation and the National Social Housing Association, which specialise in energy efficiency projects and

Stakeholder category	Name	Relevance to Project
		the international NGOs, Altair (Humanitarian Centre), which specialises in improving living standards.
	Armenia Renewable Resources and Energy Efficiency Fund	The Fund is responsible for financing a number of renewable energy and energy efficiency projects and promoting the development of the energy efficiency market in Armenia.
International / multilateral organisations	European Investment Bank (EIB)	Project partner and a source of co-finance
	World Bank	Coordination with existing project, "Armenia Energy Efficiency"
	USAID/EE Project	Exchange of data and analytical studies
	KfW, EBRD, UNECE	Exchange of data, analytical studies and coordinate awareness-raising activities

Stakeholder coordination

The primary means of stakeholder coordination will be via the Project Board (Board), which will provide an official, ongoing forum for coordinating the work of various Government agencies and other donors. In addition to work undertaken through the Board, project staff will maintain regular communication with the other agencies regarding their complementary work on energy efficiency building retrofits. See section 5. 'Implementation and institutional arrangements' for more details.

3.3. Knowledge

The project will contribute to knowledge creation and sharing by all market players. To ensure that the strengthening of knowledge will be a focus throughout the project's life, the project includes an output, Output 1.2, which deals specifically with the existence and implementation of a plan for sharing lessons learned. In addition, the provision of technical assistance to the construction sector, Government (national and sub-national) and HOAs will result in collective learning in those target groups. Energy and financial savings information will be collected, analysed and disseminated via the project website and through various other channels and activities such as workshops and advertising.

4. FEASIBILITY

4.1. Cost-efficiency and effectiveness

The project's objective is to deploy an integrated suite of interventions to systematically de-carbonise the existing building stock to realise both GHG emission reductions and sustainable development benefits. Barriers to achieving this include policy, financial, market and technical / capacity barriers. Addressing the policy, market and technical / capacity barriers requires technical assistance, which is provided in Components 1, 2 and 3. In order to address the financial barriers, financing is needed – which is provided in Components 3 and 4.

The concessional loan, subject to EIB's due diligence, will be offered on terms that will not crowd-out private and other public investment. EIB follows the principles of the 'DFI Guidance for Using Investment Concessional Finance in Private Sector Operations'.²⁵ These principles are: additionality, crowding-in, commercial sustainability, reinforcing markets, and promoting high standards. Taken together, these principles affirm EIB's commitment to provide market-consistent support for commercially sustainable projects in situations where private investment is not forthcoming or requires supplementing.

In Component 4, grants from the GCF will be given as a temporary targeted incentive to address the needs of the most vulnerable households. The financial analysis (Annex 16) shows that, for those earning below the median household income of US\$400, building retrofits are not affordable. For middle- and higher-income households, grants are not needed from an affordability point of view, and will only be used at a low level to overcome early-mover barriers. The grants will support poor and vulnerable households to allow them access to improved thermal comfort and cost / energy savings. Furthermore, incentives in the form of grants are common in developed countries – both in the EU and USA sizeable grants are common practice. KfW, for instance, provides loans together with incentive grants for energy efficiency retrofits in Germany of between 7.5-22.5%, and consequently the proposed incentive grants in Armenia can be considered modest.

The proposed project, by focusing on addressing systemic barriers to energy efficiency in existing housing – through policy and financial de-risking – represents an efficient and effective way to address Armenia's future GHG emissions and to meet the country's stated mitigation objectives as stated in the INDC and the sub-national targets set by cities. By providing incentivised financing, the project will also address first-mover costs and kick-start market-based refurbishment of existing housing stock. The effectiveness and efficiency of the proposed activities are characterised by the following key performance indicators:

Key performance indicator	Target
Estimated cost per tonne CO _{2eq} (total investment cost/expected lifetime direct emission reductions)	<ul style="list-style-type: none">• US\$ 22 / tCO_{2e} for total project financing• US\$ 14.4 / tCO_{2e} for GCF financing
Estimated cost per tonne CO _{2eq} (total investment cost/expected lifetime direct and indirect emission reductions)	<ul style="list-style-type: none">• US\$ 5-6 / tCO_{2e} for total project financing• US\$ 3.4-3.6 / tCO_{2e} for GCF financing

An appropriate benchmark for the total investment cost/expected lifetime direct emission reductions is provided by data from a recent report on energy efficiency retrofits in residential buildings in the Western Balkans.²⁶ For Albania, which has an electricity system with a grid emission factor similar to that of Armenia, the calculated cost per tonne of lifetime emission savings is between US\$ 178-897/tCO_{2e}, depending on the type of building and the type of measures considered. For some CDM projects, data are available that have enabled calculation of the investment cost per tCO₂²⁷ and examples include those provided in the following table.

²⁵ <http://www.ebrd.com/downloads/news/roundtable.pdf>

²⁶ https://www.energy-community.org/portal/page/portal/ENC_HOME/CALENDAR/Other_Meetings/2015/03_Jun_and_https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/3284024/Guidance_Note_on_Residential_Energy_Efficiency_programs.pdf

²⁷ CDM Pipeline, www.cdmpipeline.org

4.2. Risk Management

Technical and operational risks include risks related to lack of knowledge and skills, and the under-developed nature of the ESCO market. Financial risks include those related to the level of energy prices and the availability of loans for energy efficiency investments. Social and environmental risks to the project are minor. An additional risk relates to the Government's commitment to adopt and implement legislation. The most significant risks are the financial risks. These will be mitigated through the creation of financial mechanisms as part of the project.

4.3. Social and Environmental Safeguards

The project will eliminate policy, financial, market and technical barriers to create an enabling environment for investments in energy-efficient building retrofits. The interventions from the technical assistance of the GCF are mainly capacity building. The \$14 million investment by the GCF accounts for approximately 11% of the total investment cost (\$122.82 million), or about 16% compared to EIB's potential parallel contribution of \$86.25 million. Building retrofits may cause impacts such as generation of waste and safety risks to the community from installation and dismantling, but these are minimal, temporary and can be easily mitigated.

The overall outcome of the project will be reduction in energy consumption of the building sector, with associated reductions in GHG emissions and wider opportunities for gender mainstreaming in capacity building, financing and employment (about 1,700 jobs will be created).

The project has completed the UNDP social and environmental screening procedure (see SESP attached as Annex 5). This screening was undertaken to ensure this project complies with UNDP's Social and Environmental Standards. The overall social and environmental risk category for this project is: **Low**.

4.4. Sustainability and Scaling Up

Long-term sustainability of the project is embedded in the project design, which aims at overcoming systemic barriers and creating market conditions for energy efficiency investment thus catalysing impacts beyond the end of the GCF funding. Sustainable market opportunities for energy efficiency investment will be created by:

- Addressing policy needs within Component 2: the legislative barriers to public and private sector investment will be addressed at national, sub-national and local authority levels, and technical and capacity barriers will be addressed.
- Addressing financing needs within Component 3: The project will put in place arrangements for long-term sustainable provision of affordable finance for energy efficiency building renovation, which matches the risk-return profile of such investment. It will do this by building the knowledge and experience of local banks and ESCOs.
- Catalysing initial investment through financial incentives provided under Component 4, which will serve to kick-start the market, addressing first-mover barriers at both local bank and borrower levels. By seeding a critical mass of investment, practical experience and know-how will be created, thus addressing these systemic barriers. For residential buildings, where the incentive will be targeted at vulnerable households, the project will work through the existing Family Benefit Scheme of the Republic of Armenia. By following this approach, the project will demonstrate how the funding that the Government currently uses to compensate vulnerable households against past energy price increases can be redirected to energy savings. To close the loop, the policy de-risking activities will aim to establish sustainable Government funding wherever such incentives will continue to be needed as a long-term way to address the needs of households living in poverty.

4.5. Economic and/or Financial Analysis

The project will accelerate the market for energy efficient retrofits of buildings in: a) the residential sector, and b) the public sector. In the residential sector, two typical building models are considered: a single-family house and a multi-owner apartment building. In the public sector, two technical scenarios are considered for the same building: a retrofit with only demand-side (energy-saving) measures, and a retrofit with both demand- and supply-side (fuel-switch) measures.

Starting with the investment costs and modelled energy and financial savings, a bottom-up financial and economic model has been developed for each building-type. The fuel prices (for natural gas and electricity) are increased annually at a rate of 1% per year. This is a conservative figure: until recent public protests broke out, the Government's plan was for electricity prices to increase by 16% in 2015 alone. Investment parameters include own funds (10% for residential buildings and 20% for public building), an incentive grant and a loan, and sensitivity analysis has been carried out for these parameters. The simple payback, internal rate of return (IRR) and net present value (NPV) are determined using standard financial modelling.

The US\$20 million of GCF grants will be composed of funding used for technical assistance (Components 1, 2 and 3) to remove market and policy barriers to energy efficiency building retrofits; and for incentives (Component 4) to address the needs of vulnerable households by making loans for energy efficiency building retrofits more affordable. The technical assistance provided in Components 1, 2 and 3 are grant-funded since they address and remove systemic risks and overcome market barriers.

In Component 4, grants from the GCF will be given as a temporary targeted incentive focused on vulnerable households. The grants will support poor and vulnerable households to allow them access to improved thermal comfort and cost / energy savings. Incentives in the form of grants are common in developed countries – both in the EU and USA, sizeable grants are common practice.²⁸ In Germany, for instance, KfW provides loans together with incentive grants for energy efficiency retrofits of between 7.5-22.5%²⁹, and consequently the proposed incentive grants in Armenia can be considered modest. A total of US\$ 12.5 million in incentive grants will be used to support vulnerable households in the residential sector. The strategy of working via the existing social support mechanisms aims to ensure that ownership of this support shifts to internal Armenian social security funding.

In the public sector, a small incentive (totalling around US\$ 1.5 million) is also justified based on the additionality that a higher level of energy efficiency will be promoted than under the 'business as usual' scenario. In addition, the modest incentive will also serve to accelerate the renovation of buildings, thus improving the quality of life of citizens using public facilities such as hospitals and kindergartens.

²⁸ See for instance <http://aceee.org/files/proceedings/2012/data/papers/0193-000422.pdf>, http://www.epa.gov/cleanenergy/documents/suca/program_incentives.pdf and http://www.inspirefp7.eu/wp-content/uploads/2014/08/WP2_D2.1b_20140523_P18_Policies-and-incentives-relevant-to-retrofit.pdf

²⁹ See slide 10 of https://www.energy-community.org/portal/page/portal/ENC_HOME/DOCS/3736187/KfW_3_pillar_approach_EE_public_buildings.pdf

5. PROJECT RESULTS FRAMEWORK

In keeping with UNP guidance, activities have not been included in the above results framework. However, a full list of activities and inputs can be found in [Annex 19](#) which have been taken from the original GCF proposal.

This project will contribute to the following Sustainable Development Goal (s): 7. Ensure access to affordable, reliable, sustainable and modern energy for all					
This project will contribute to the following country outcome included in the UNDAF/Country Programme Document: UNDAF Outcome 7/Country Programme Outcome(s) 4 (13): By 2020, sustainable development principles and good practices for environmental sustainability resilience building, climate change adaptation and mitigation and green economy are introduced and applied. Expected CPAP Output: 4.4 Low carbon and green economy become priority for the Government, supported by relevant regulatory framework and activities.					
This project will be linked to the following output of the UNDP Strategic Plan: Output 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy)					
GCF Paradigm shift objectives: Shift to low-emission sustainable development pathways.					
1. The project objective is to use an integrated suite of interventions to systematically de-carbonise the existing building stock to realise both energy savings and sustainable development benefits.					
2. The project will create a favourable market environment and scalable business model for investment in energy efficiency retrofits, leading to sizeable energy savings and accompanying GHG emission reductions (directly, 1.4 million tCO ₂ over the 20-year lifetime of the investments; including additional indirect savings, a total of between 4.2-4.4 tCO ₂ eq). It will also catalyse additional private and public sector financing of approximately US\$ 100 million.					
	Objective and Outcome Indicators	Baseline	Mid-term Target	End of Project Target	Assumptions
SDG indicators	7.3.1 Energy intensity measured in terms of primary energy and GDP	5.75 (Megajoules per USD constant 2011 PPP GDP (Units)) 2012 (http://unstats.un.org/sdgs/indicators/database/ for Armenia)	TBD	TBD	Project data will be collated and shared with the National Statistical Service and other bodies monitoring SDG indicators
UNDP Strategic Plan Indicators	1.5.1 Number of new development partnerships with funding for improved energy efficiency and/or sustainable energy solutions targeting underserved communities / groups and women	0	20	75	See Annex 8
UNDP IRRF 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access	# direct project beneficiaries	0	-	210,000	

Fund-level impacts						
Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
<i>M3.0 Reduced emissions from buildings, cities, industries and appliances</i>	GCF core indicator: Tonnes of carbon dioxide equivalent (tCO ₂ eq) reduced or avoided as a result of Fund-funded projects / programmes	EMIS system to be set up in Component 1 of the Project	0	100,000 tCO ₂ -eq/year	Direct: 1.39 Mt over 20-year lifetimes of the buildings Indirect: additional 4.2 to 4.4 Mt of savings over the 20-year lifetimes of buildings	Improved thermal condition of buildings results in energy savings and GHG emission savings.
	GCF core indicator: Cost per tCO ₂ eq, defined as total investment cost / expected lifetime emission reductions	Project monitoring data on costs plus data from the indicator on tonnes of CO ₂ eq reduced	0	-	US\$ 14 / tCO ₂ e for GCF for direct emission savings, and between US\$ 3.4-3.6 / tCO ₂ e for GCF for the market transformation.	
	GCF core indicator: Volume of finance leveraged by the project and as a result of the Fund's financing, disaggregated by public and private sources	Project reporting	0	-	US\$ 100 million, of which US\$ 20m is from public sources and US\$ 80m is from private sources	

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
Project outcomes	Outcomes that contribute to Fund-level impacts					
M5.0 Strengthened institutional and regulatory systems	5.1 Institutional and regulatory systems that improve incentives for low-emission planning and development and their effective implementation	Score on World Bank RISE indicators for building sector (see Annex 8)	34	64	91	Strengthened institutional and regulatory systems lead to practical change and do not remain on paper
M7.0 Lower energy intensity of buildings, cities, industries and appliances	7.1 Energy intensity / improved efficiency of buildings, cities, industries and appliances as a result of Fund support	Reported data from project monitoring component	Residential buildings: 185 kWh / m ² Public buildings: 200 kWh / m ²	Reduced by 50%	Reduced by 50%	
1. Robust MRV for the building sector established (<i>Output 1 – Establishment of building sector MRV and knowledge management</i>)	Establishment of a web-based, publicly-accessible MRV database	Project reporting	No MRV in place	Website established and fully web-accessible	5,000 website hits per year	MRV systems continue producing data after project end
2. National, sub-national and local authorities adopt and implement an enabling policy framework for energy efficiency retrofits (<i>Output 2 – Policy de-risking</i>)	see M5.0 above					
3. Access to affordable capital for energy efficiency retrofits provided (<i>Output 3 – Financial de-risking</i>)	Value of loans for building renovation provided	Reported data from project monitoring component	0	US\$ 20m	US\$ 100m	The Government continues to bring energy prices in line with market prices Level of skills among local professionals is

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
						maintained at a level that can support market growth Lenders make use of learning opportunities offered by the financial mechanisms supported in this project
4. Affordability of energy efficiency retrofits for most vulnerable households ensured through targeted financial incentives to building / apartment owners / ESCOs <i>(Output 4 – Financial incentives)</i>	Number of vulnerable beneficiaries (lowest quintile of household income) with improved building energy efficiency	Applications submitted for the financial incentives scheme	0	10,000	50,000	Targeted financial incentives are aligned with the capital provided for energy efficiency retrofits, effectively leading to the implementation of retrofits
Project outputs / GCF Activities						
1.1 MRV systems for the buildings sector in Armenia established	Development and coverage of MRV system and database	Regular project reporting	NA	Developed and in use for renovated buildings: full coverage of buildings retrofitted in this project	Developed and in use for renovated buildings: full coverage of buildings retrofitted in this project	Building occupants agree to cooperate with the implementation of MRV systems
1.2 Knowledge management and MRV information disseminated	Existence and implementation of a plan for sharing lessons learned Number of men and women users of project website	Regular project reporting	NA	Created and implemented	Number of beneficiaries: 250,000	Learning opportunities offered by this project lead to sustained lending for energy efficiency investments

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
	Number of women's group involved					
2.1 Public instruments for the promotion of investment in energy efficiency selected	UNDP's framework to support policy-makers in selecting public instruments to promote energy efficiency investment in developing countries used, adapted as necessary	Report on implementation of the framework	Framework not used for energy efficiency in Armenia	Number of public instruments selected: 3	Number of public instruments selected: 3	Policy-makers follow through on implementation of the selected instruments
2.2 Support provided to on-going legal reform in the field of energy efficiency	Binding legislation on building codes and adequate secondary legislation adopted	National legislation	Level 3. Policies proposed and consultation ongoing ³⁰	Level 4. Strong policy adopted	Level 5. Strong policy adopted and institutional capacity strengthened	UNDP's working relationship with the Government is effectively employed to maintain the momentum for legal reform
2.3 Support provided for the creation of an enabling policy framework for energy efficiency retrofits in multi-owner residential buildings	Adequate secondary legislation – providing a clear and effective set of functional models and a standard set of rules for multi-owner building management bodies to undertake energy efficiency retrofits – developed, introduced and enforced	National legislation	Secondary legislation lacking	Level 6. Sub-sector plans reflect key policy targets	Level 7. Regulatory framework developed	UNDP's working relationship with the Government is effectively employed to maintain the momentum for creation of an enabling policy framework
2.4 Support provided to building owners / managers / owner associations / ESCOs on legal matters related to	Business models for repayment of energy efficiency investments implemented	Regular project reporting	Level 1. No business models for repayment	Level 3. Strong proposal defined with buy-in from	Level 5. Financial mechanism in operation with evidence of stability	Gradual introduction of performance-based contracts and risk transfer to ESCOs, combined with capacity building, lead to

³⁰ See note below the table for an explanation of the baseline and targets.

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
energy efficiency retrofit projects			of energy efficiency investments in buildings in place	stakeholders confirmed		the development of an ESCO market
2.5 Exit strategy measures implemented	Additional exit strategy measures designed and implemented	Regular project reporting	N/A	Additional exit strategy measures designed	Additional exit strategy measures implemented	Exit strategy succeeds in maintaining the momentum created by the project and leads to local stakeholders continuing to further develop the market
3.1 Technical assistance provided to banks and other financial institutions	Capacity of banks to develop and market products for energy efficiency retrofits in individual houses Number of men and women professionals trained on appraising investments and developing energy efficiency projects	Survey of bank employees	Banks do not have the capacity to develop and market products for energy efficiency retrofits in individual houses	2 Armenian banks have the capacity to develop and market products for energy efficiency retrofits in individual houses	4 Armenian banks have the capacity to develop and market products for energy efficiency retrofits in individual houses	Banks are interested and participate in capacity building to enable them to deliver energy efficiency projects in individual houses and buildings
3.2 Technical assistance for HOA market facilitation provided to banks	Capacity of banks to develop and market products for energy efficiency retrofits in multi-owner residential buildings	Survey of bank employees	Banks do not have the capacity to develop and market products for energy efficiency retrofits in	2 Armenian banks have the capacity to develop and market products for energy efficiency retrofits in multi-owner	4 Armenian banks have the capacity to develop and market products for energy efficiency retrofits in multi-owner residential buildings	Banks are interested and participate in capacity building to enable them to deliver energy efficiency projects in multi-owner residential buildings

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
			multi-owner residential buildings	residential buildings		
3.3 Technical assistance provided to local government to develop energy efficiency retrofit projects for publicly-owned buildings	Capacity of local government to develop energy efficiency retrofit projects for publicly-owned buildings	Survey of local government employees	Local government does not have the capacity to develop energy efficiency retrofit projects for publicly-owned buildings	50% of local planning department employees believe local government has the capacity to develop energy efficiency retrofit projects for publicly-owned buildings	80% of local planning department employees believe local government has the capacity to develop energy efficiency retrofit projects for publicly-owned buildings	Local government is interested and participates in capacity building to enable it to deliver energy efficiency projects in public buildings
3.4 Access to affordable capital for energy efficiency retrofits provided	Amount and number of loans for building renovation provided	Reported data from project monitoring component	No lending provided	\$20 million	\$86.25 million	Economic situation continues to improve
3.5 Marketing platform created	Marketing materials developed and platform created	Marketing materials, project reporting	No marketing materials exist	Marketing materials created and disseminated to at least 5,000 stakeholders	Marketing materials created and disseminated to at least 25,000 stakeholders	Marketing campaign successfully raises awareness of the opportunities offered by building energy efficiency retrofits
4.1 Targeted financial incentives provided to vulnerable groups to help address the affordability gap	Financial mechanism to provide targeted financial incentives in place and incentives provided	Reported data from project monitoring component	No incentives in place	Incentives provided to 15,000 beneficiaries	Incentives provided to 50,000 beneficiaries	Sufficient uptake of the financial incentive among the target market of vulnerable home-owners

Expected Result	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term (if applicable)	Final	
	Number of female-headed households who received funding Number of beneficiaries (disaggregated by sex and age) in the female-headed households					

6. MANAGEMENT ARRANGEMENTS

i. Roles and responsibilities of the project's governance mechanism

The project will be implemented following UNDP's National Implementation Modality (NIM), according to the Standard Basic Assistance Agreement between UNDP and the Government of Armenia, and the Country Programme Action Plan (CPAP). The NIM is explicitly designed to ensure domestic actors and systems are used to strengthen national ownership, accountability and capacity development.

The **Implementing Partner** (GCF Executing Entity) for this project is the Ministry of Nature Protection (MoNP), the national authorised body for UNFCCC implementation in Armenia and the appointed NDA for the GCF. MoNP has been coordinating climate change programmes since 1997. The Implementing Partner is the entity responsible and accountable for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of the project resources. The Implementing Partner is responsible for:

- Approving and signing the multiyear workplan;
- Approving and signing the combined delivery report at the end of the year; and,
- Signing the financial report or the funding authorization and certificate of expenditures.

The project organisation structure is summarised in Figure 2.

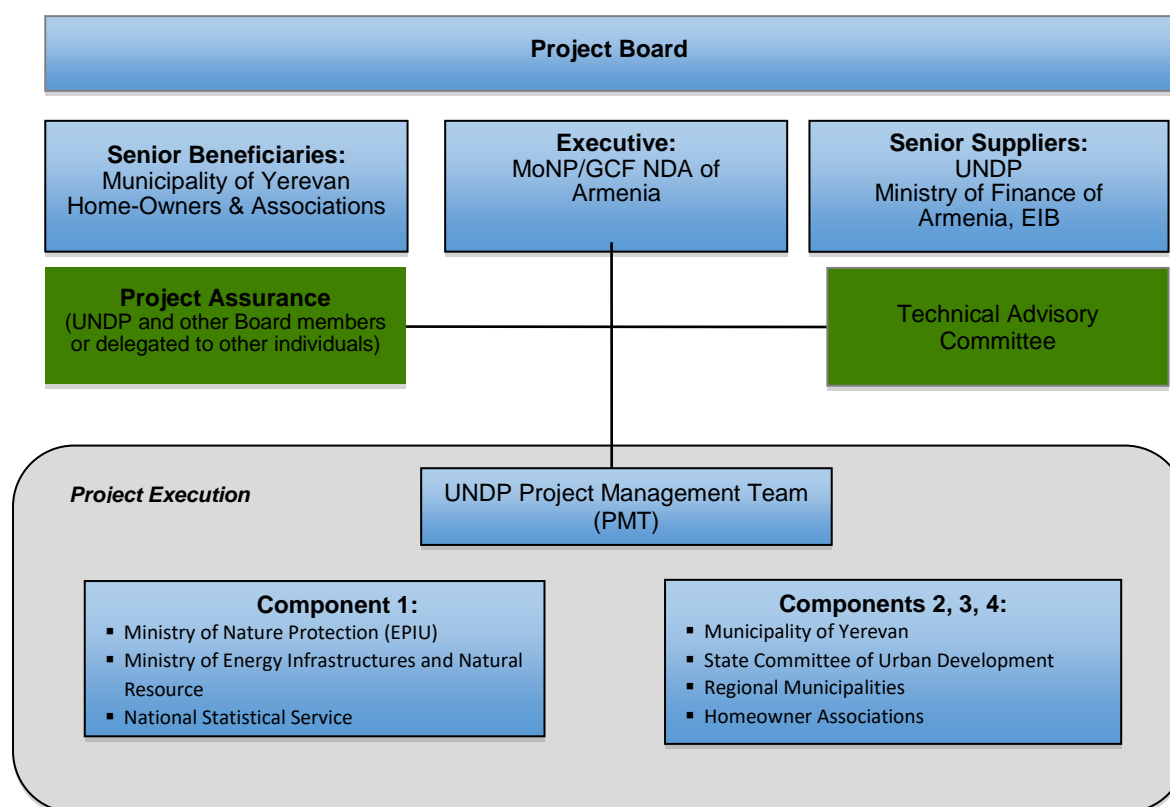


Figure 2. Project Organisation Structure

The following parties will assist MoNP in successfully delivering project outcomes: MoNP's Environmental Project Implementation Unit (EPIU) and the Municipality of Yerevan (through Project Management Team (PMT) – to be established), as the Responsible Parties acting on behalf of MoNP (Executing Entity of this project). HACT assessment of EPIU and Municipality of Yerevan has been conducted at the request of GCF before the project signature.

Day to day implementation of the project will be conducted by PMT operating under UNDP rules and procedures. The responsible parties will act on behalf of the implementing partner on the basis of written agreement to purchase or provide services using the project budget. The responsible parties will also manage the use of these goods and services to carry out project activities and produce outcomes.

Project Board: The Project's governance mechanism (the Project Board, also called Project Steering Committee) is the group responsible for making by consensus, management decisions for a Project will hold regular project reviews at least once every six months (it can convene as and when necessary on an ad hoc basis including virtually as urgent need arises) to assess the performance of the project and review the Multi-Year Work Plan to ensure realistic budgeting over the life of the Project. In the Project's final year, the Project Board shall hold an end-of Project review to capture lessons learned and discuss opportunities for scaling up and to socialize project results and lessons learned with relevant audiences. The Board will ensure the project remains on track with its goals and work plans.

The Project Board will be comprised of the representatives of the Ministry of Nature Protection, the Ministry of Finance, Yerevan Municipality, UNDP and financing institutions (EIB). Each institution will formally appoint a representative to the Board. In order to ensure UNDP's ultimate accountability, Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, the final decision shall rest with the UNDP Portfolio Manager.

Technical Advisory Committee: The Technical Advisory Committee will comprise representatives of interested public and private agencies. The Ministry of Energy Infrastructure and Natural Resources, the State Urban Development Committee, the Territorial Administration and Development Ministry, the Ministry of Economic Development and Investment, the Ministry of Nature Protection, the Ministry of Social Affairs and Labor, the R2E2 Fund, the National Institute for Standards of the Republic of Armenia, and the National University of Architecture and Construction will be invited to nominate representatives to the Technical Advisory Committee. This group will meet annually, with periodic consultation as needed throughout the year. The Board will actively seek and take into account the input from the Technical Advisory Committee. Once a year, Board meetings will be timed to occur immediately after the annual meetings of the Technical Advisory Committee.

Project Manager: The Project Manager has the authority to run the project on a day-to-day basis on behalf of UNDP within the constraints laid down by the Project Board. The Project Manager function will end when the final project Final Independent Evaluation Report, and other documentation required by the GCF and UNDP, have been completed and submitted to UNDP. The Project Manager is responsible for day-to-day management and decision-making for the project and for the establishment of internal control processes in the project. The Project Manager's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The Project Manager will be supported by technical and legal advisors. The Terms of Reference of the key technical staff will be developed during the inception phase.

Project Assurance: Project assurance is the responsibility of each Project Board member. UNDP provides a three –tier oversight and quality assurance role involving UNDP Country Offices, regional and headquarters levels. The project assurance role supports the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project Assurance has to be independent of the Project Manager; therefore, the Project Board cannot delegate any of its assurance responsibilities to the Project Manager. A UNDP Deputy Resident Representative typically holds the Project Assurance role on behalf of UNDP. In addition, the UNDP Global Environmental Finance Unit (UNDP-GEF Unit) based in the Istanbul Regional Hub and Headquarters provides oversight and quality assurance support.

MoNP: MoNP will be responsible for the overall supervision of the project to ensure synergy with other GHG mitigation policies and measures in the country. UNDP has a long track-record of successful collaboration with MoNP, dating from 1997. MoNP has the capacity and knowledge to guide and oversee the conceptual aspect of project implementation, including professional guidance on achieving the climate change mitigation objectives and overseeing the GHG emissions reduction impacts. MoNP has been the implementing agency for the full-size UNDP- supported and GEF-financed 'Improving Energy Efficiency of Municipal Heat and Hot Water Supply' project and for the UNDP- supported and GEF-financed 'Improving Energy Efficiency in Buildings' project, and has a proven track-record in successful implementation and cooperation with different ministries and stakeholders. The day-to-day implementation of the project will be carried out through the well-established UNDP Climate Change Programme Unit coordinated by MoNP. GCF funds will not be used to pay the salaries of Government personnel, whose costs will be fully covered by the Government.

Environmental Project Implementation Unit (EPIU): MoNP's Environmental Project Implementation Unit (EPIU) will be closely involved in project implementation (in particular, it will lead the Component 1 on MRV) and will also receive assistance and capacity building from the project to prepare for its subsequent accreditation under the GCF as a National Accredited Entity. EPIU is currently undergoing the accreditation process for the Adaptation Fund, and the support to GCF accreditation will build on this AF baseline.

Municipality of the City of Yerevan: The Municipality of the City of Yerevan, as the major beneficiary of the project, will also act as a Responsible Party of the project. The Municipality is approving and managing the city budget on an annual base. The 2015 budget, approved on December 23 by Council decision #265-N, involves income of approximately US\$ 149.73 million and expenditures of approximately US\$ 150.25 million. Yerevan Municipality has a special procurement department responsible for all procurements, including services and works executed through open and competitive tenders in compliance with the Law on Procurement of the Republic of Armenia. Yerevan Municipality has a long track-record of successful collaboration in, and implementation of, international projects. Some of the most recent examples include the implementation of the 'Sustainable Transport Development Investment Programme' under a loan agreement between the Armenian Republic and the Asian Development Bank. The project, with a total value of US\$ 48 million, is implemented by the Municipality through the 'Yerevan Construction Investment Project Implementation Unit (PIU)'. The Municipality is also an implementing agency of the EBRD US\$ 4.0 million loan and EURO 1.9 million grant project aimed at energy efficient upgrades of the street lighting system in the city.

The UNDP CO will oversee annual financial audits, and the execution of an Interim Independent Evaluation and a Final Independent Evaluation. All financial transactions and agreements, including contracts with staff and consultants as well as procurement of goods and services, will follow the rules and regulations of the United Nations. The UNDP Regional Coordinating Unit will provide regular programmatic and administrative oversight as well.

Project Management Team

Day to day implementation of the project will be conducted by the PMT operating under UNDP rules and procedures. The PMT will be led by the Project Manager.

7. MONITORING AND EVALUATION PLAN

The project results as outlined in the project results framework will be monitored and reported annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.

Project-level monitoring and evaluation will be undertaken in compliance with the [UNDP POPP](#) and the [UNDP Evaluation Policy](#). While these UNDP requirements are not outlined in this project document, the UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GCF-specific M&E requirements will be undertaken in accordance with relevant GCF policies.

In addition to these mandatory UNDP and GCF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Workshop Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including national/regional institutes assigned to undertake project monitoring.

Annual Project Report

The Project Manager, the UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual project report covering the calendar year for each year of project implementation. The Project Manager will ensure that the indicators included in the project results framework are monitored annually in advance so that progress can be included in the report. Any environmental and social risks and related management plans will be monitored regularly, and progress will be included in the report.

The Annual Project Report will be shared with the Project Board. The UNDP Country Office will coordinate the input of other stakeholders to the report as appropriate. The quality rating of the previous year's report will be used to inform the preparation of the subsequent report.

Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyse and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.

Interim Independent Evaluation

An Interim Independent Evaluation (IIE) process will begin after the second Annual Project Report has been submitted to the GCF. The IIE will be conducted to conclude at the midpoint of the project (2.5 years after Project Document signature). The IIE report is expected to be submitted to the GCF in the year marking the halfway point between the Project Document signature. The IIE findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration.

Final Independent Evaluation

An independent Final Independent Evaluation (FIE) will take place upon completion of all major project outputs and activities. The Final Independent Evaluation process will begin at least six months before operational closure of the project allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability. The Final Independent Evaluation Report is to be submitted to the GCF Secretariat 3 months before the scheduled end of the project.

Final Report

The Project Completion Report (Final APR) along with the FIE report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

8. FINANCIAL PLANNING AND MANAGEMENT

The total cost of the project is USD 116,070,000 . This is financed through a GCF grant of USD 20,000,000, USD 420,000 in cash co-financing and USD 1,000,000 parallel co-financing to be administered by UNDP, USD 8,000,000 from the Yerevan Municipality, USD 400,000 from Government of Armenia along with USD 86,250.000 in parallel co-financing from EIB, as well as other funding sources available in the market. UNDP, as the GCF Accredited Agency, is responsible for the oversight and quality assurance of the execution of GCF resources and the cash co-financing transferred to UNDP bank account only.

The Accredited Entity's fee is not included in the GCF Proceeds.

(i) Project Financing

Component	Outputs	Financing institution			Total (US\$)
		GCF	Government	UNDP	
		Grant	Grant	Grant	
Component 1. Establishment of Building Sector MRV	1.1 MRV systems for the buildings sector in Armenia	0.650	0.100	0.605	1.595
	1.2 Knowledge management and MRV information dissemination	0.240			
Component 2. Policy De-Risking	2.1 Public instruments for the promotion of investment in energy efficiency	0.140	0.200	0.605	1.695
	2.2 Support to ongoing legal reform in the field of energy efficiency	0.200			
	2.3 Support for the creation of an enabling policy framework for energy efficiency retrofits in multi-owner residential buildings	0.120			
	2.4 Support to building owners / managers / owner associations / ESCOs	0.280			
	2.5 Exit strategy	0.150			
Component 3. Financial De-Risking	3.1 Technical assistance to banks and other financial institutions	0.850	8.000	0.000	11.420
	3.2 Technical assistance to banks for Home-Owner Association (HOA) market facilitation	1.270			
	3.3 Technical assistance to local government to develop energy efficiency retrofit projects for publicly-owned buildings	0.870			
	3.4 Access to affordable capital for energy efficiency retrofits	0.000			

Component	Outputs	Financing institution			Total (US\$)
		GCF	Government	UNDP	
		Grant	Grant	Grant	
	3.5 Marketing platform	0.430			
Component 4. Financial Incentives	4.1 Targeted financial incentives provided to vulnerable groups	14.000	0.000		14.000
Project Management	Project Manager, assistant, travel, office running cost and office equipment, meetings of Project Board and Technical Advisory Committee, independent evaluation, financial audit and other project management costs.	0.800	0.100	0.210	1.110
Total		20.000	8.400	1.420	29.820

(ii) GCF Disbursement schedule

GCF grant funds will be disbursed according to the GCF disbursement schedule. The Country Office will submit an annual work plan to the UNDP-GEF Unit and comply with the GCF milestones in order for the next tranche of project funds to be released. All efforts must be made to achieve 80% delivery annually.

Description	Indicative Scheduled date	(USD)	Milestones
For Year 1 Activities	No later than 4 weeks after date of effectiveness of the FAA	729,000	(i) Effectiveness of Funding Activity Agreement (FAA); (ii) Delivery to the GCF by UNDP of an executed copy of the Subsidiary Agreement, in the form of a Project Document, between the UNDP and the Executing Entity; and (iii) Completion of the detailed evaluation of the financial management capacity of the Municipality of Yerevan and the Environmental Project Implementation Unit of the Ministry of Nature Protection under the UNDP Framework for Cash Transfer to Implementing Partners as satisfactory to implement the Project.
For Year 2 Activities	12 month after the previous disbursement	1,608,000	Completion and submission to the GCF in form and substance satisfactory to the GCF and UNDP of an operational manual for the implementation of financial incentives under output 4 (as described in Project Results Framework) identifying eligibility and selection criteria for the targeted beneficiaries.
For Year 3 Activities	12 month after the previous disbursement	3,596,000	General conditions for all disbursements: (i) Other than in relation to the first disbursement, submission of evidence by UNDP to the GCF that at least 70% (seventy per cent) of the funds previously disbursed have been spent for Eligible Expenditures; (ii) Other than in relation to the first disbursement, submission by UNDP of APRs and financial information in accordance with the AMA; (iii) Delivery of a Request for Disbursement, in accordance with the template (Schedule 6 of FAA), by UNDP, signed by the person or persons authorized to do so, within thirty (30) calendar days prior to the date on which the disbursement is requested to be made, which date of disbursement shall not be later than the Closing Date; and

Description	Indicative Scheduled date	(USD)	Milestones
			(iv) Delivery to the GCF by the UNDP of evidence, satisfactory to the GCF, of the authority of the person or persons authorized to sign each Request for Disbursement and the authenticated specimen signature of each such person.
For Year 4 Activities	12 month after the previous disbursement	4,191,000	<p>General conditions for all disbursements:</p> <p>(i) Other than in relation to the first disbursement, submission of evidence by UNDP to the GCF that at least 70% (seventy per cent) of the funds previously disbursed have been spent for Eligible Expenditures;</p> <p>(ii) Other than in relation to the first disbursement, submission by UNDP of APRs and financial information in accordance with the AMA;</p> <p>(iii) Delivery of a Request for Disbursement, in accordance with the template (Schedule 6 of FAA), by UNDP, signed by the person or persons authorized to do so, within thirty (30) calendar days prior to the date on which the disbursement is requested to be made, which date of disbursement shall not be later than the Closing Date; and</p> <p>(iv) Delivery to the GCF by the UNDP of evidence, satisfactory to the GCF, of the authority of the person or persons authorized to sign each Request for Disbursement and the authenticated specimen signature of each such person.</p>
For Year 5 Activities	12 month after the previous disbursement	5,358,000	<p>General conditions for all disbursements:</p> <p>(i) Other than in relation to the first disbursement, submission of evidence by UNDP to the GCF that at least 70% (seventy per cent) of the funds previously disbursed have been spent for Eligible Expenditures;</p> <p>(ii) Other than in relation to the first disbursement, submission by UNDP of APRs and financial information in accordance with the AMA;</p> <p>(iii) Delivery of a Request for Disbursement, in accordance with the template (Schedule 6 of FAA), by UNDP, signed by the person or persons authorized to do so, within thirty (30) calendar days prior to the date on which the disbursement is requested to be made, which date of disbursement shall not be later than the Closing Date; and</p> <p>(iv) Delivery to the GCF by the UNDP of evidence, satisfactory to the GCF, of the authority of the person or persons authorized to sign each Request for Disbursement and the authenticated specimen signature of each such person.</p>
For Year 6 Activities	12 month after the previous disbursement	4,518,000	<p>General conditions for all disbursements:</p> <p>(i) Other than in relation to the first disbursement, submission of evidence by UNDP to the GCF that at least 70% (seventy per cent) of the funds previously disbursed have been spent for Eligible Expenditures;</p> <p>(ii) Other than in relation to the first disbursement, submission by UNDP of APRs and financial information in accordance with the AMA;</p> <p>(iii) Delivery of a Request for Disbursement, in accordance with the template (Schedule 6 of FAA), by UNDP, signed by the person or persons authorized to do so, within thirty (30) calendar days prior to the date on which the disbursement is requested to be made, which date of disbursement shall not be later than the Closing Date; and</p> <p>(iv) Delivery to the GCF by the UNDP of evidence, satisfactory to the GCF, of the authority of the person or persons authorized to sign each Request for Disbursement and the authenticated specimen signature of each such person.</p>
Total :		20,000,000	

9. TOTAL BUDGET AND WORKPLAN

GCF Output / Atlas Activity	Responsible Party (Atlas Implementing Agent)	Financing Source	Budgetary Account Code	Budget Description	Account	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	Amount Year 6 (USD)	TOTAL (USD)		
1. Establishment of building sector MRV and knowledge management	MNP	GCF	71200	International Consultants		18,000	45,000	25,000	25,000	-	-	113,000		
			71300	Local Consultants		35,000	40,000	35,000	35,000	35,000	35,000	215,000		
			71400	Contractual Services - Individ		15,000	15,000	15,000	15,000	15,000	15,000	90,000		
			72100	Contractual Services - Companies		30,000	30,000	40,000	40,000	40,000	35,000	215,000		
			72200	Equipment and Furniture		50,000	4,000		-		-	-	54,000	
			72400	Communic & Audio Visual Equip		10,000	20,000	3,000	3,000	3,000	3,000	3,000	42,000	
			72800	Information Technology Equipmt		7,000	28,000	5,000	3,000	3,000	3,000	3,000	49,000	
			73400	Rental & Maint of Other Equip		-	2,000	2,000	2,000	2,000	2,000	2,000	10,000	
			74200	Audio Visual & Print Prod Costs		7,000	7,000	7,000	5,000	5,000	5,000	5,000	36,000	
			74500	Miscellaneous Expenses		1,000	1,000	1,000	1,000	1,000	1,000	1,000	6,000	
			75700	Training, Workshops and Conference		8,000	12,000	10,000	10,000	10,000	10,000	10,000	60,000	
				GCF				181,000	204,000	143,000	139,000	114,000	109,000	890,000
				71400	Contractual Services - Individ			-	17,000	17,000	17,000	17,000	17,000	85,000

		UND P	71600	Travel	4,000	3,000	3,000	3,000	3,000	3,000	19,000
			72100	Contractual Services - Companies	22,000	20,000	20,000	10,000			72,000
			75700	Training, Workshops and Conference	4,000	4,000	4,000	4,000	4,000	4,000	24,000
				UNDP	30,000	44,000	44,000	34,000	24,000	24,000	200,000
				Total 1	211,000	248,000	187,000	173,000	138,000	133,000	1,090,000
2. Policy de-risking	MNP	GCF	71200	International Consultants	50,000	80,000	80,000	60,000	60,000	10,000	340,000
			71300	Local Consultants	35,000	45,000	45,000	45,000	30,000	5,000	205,000
			71400	Contractual Services - Individ	25,000	25,000	25,000	25,000	-	-	100,000
			71600	Travel	5,000	5,000	5,000	5,000	5,000	-	25,000
			72100	Contractual Services - Companies	25,000	30,000	25,000	25,000	-	-	105,000
			74200	Audio Visual & Print Prod Costs	8,000	8,000	6,000	6,000	5,000	3,000	36,000
			75700	Training, Workshops and Conference	8,000	15,000	18,000	18,000	10,000	10,000	79,000
				GCF	156,000	208,000	204,000	184,000	110,000	28,000	890,000
				Total 2	156,000	208,000	204,000	184,000	110,000	28,000	890,000
3. Financial de-risking	MNP	GCF	71200	International Consultants	40,000	180,000	160,000	160,000	140,000	50,000	730,000
			71300	Local Consultants	40,000	120,000	120,000	130,000	120,000	60,000	590,000
			71400	Contractual Services - Individ	22,000	35,000	35,000	35,000	35,000	35,000	197,000
			71600	Travel	5,000	26,000	30,000	20,000	20,000	9,000	110,000
			72100	Contractual Services - Companies	190,000	260,000	300,000	320,000	320,000	120,000	1,510,000

			74200	Audio Visual & Print Prod Costs	-	20,000	40,000	40,000	30,000	20,000	150,000
			75700	Training, Workshops and Conference	8,000	35,000	30,000	20,000	20,000	20,000	133,000
				Total 3	305,000	676,000	715,000	725,000	685,000	314,000	3,420,000
4. Financial incentives	MNP	GCF	72600	Grants	-	-	900,000	900,000	1,500,000	1,800,000	5,100,000
			72100	Contractual Services - Companies	-	400,000	1,500,000	2,100,000	2,800,000	2,100,000	8,900,000
				Total 4	-	400,000	2,400,000	3,000,000	4,300,000	3,900,000	14,000,000
5. Project management	UNDP	GCF	71400	Contractual Services - Individ	50,000	63,000	63,000	63,000	63,000	63,000	365,000
			71600	Travel	5,000	5,000	5,000	5,000	5,000	5,000	30,000
			72400	Communic & Audio Visual Equip	5,000	6,000	5,000	5,000	5,000	4,000	30,000
			72800	Information Technology Equipmt	5,000	5,000	5,000	5,000	5,000	5,000	30,000
			74596	DPC	14,000	35,000	50,000	60,000	66,000	80,000	305,000
			75700	Training, Workshops and Conference	8,000	6,000	6,000	5,000	5,000	10,000	40,000
				GCF	87,000	120,000	134,000	143,000	149,000	167,000	800,000
		UNDP	71200	International Consultants	-	15,000	30,000	-	-	40,000	85,000
			71400	Contractual Services - Individ	15,000	12,000	12,000	10,000	9,000	9,000	67,000
			72400	Communic & Audio Visual Equip	3,000	2,500	2,500	3,000	2,500	2,500	16,000
			72500	Supplies	2,000	2,000	2,000	2,000	2,000	2,000	12,000

			74100	Professional Services - Int	2,000	4,000	4,000	4,000	7,000	8,000	29,000
			74200	Audio Visual & Print Prod Costs	3,000	2,000	2,000	1,000			8,000
			74500	Miscellaneous Expenses	1,000	1,000	1,000	-	-	-	3,000
				UNDP	26,000	38,500	53,500	20,000	20,500	61,500	220,000
				Total 5	113,000	158,500	187,500	163,000	169,500	228,500	1,020,000
Total GCF					729,000	1,608,000	3,596,000	4,191,000	5,358,000	4,518,000	20,000,000
Total Accredited Entity (cash)					56,000	82,500	97,500	54,000	44,500	85,500	420,000
Total Accredited Entity (parallel)											1,000,000
Total Government (MNP)											400,000
Total Yerevan Municipality											8,000,000
Total EIB											86,250,000
Grand Total											116,070,000

Overall project workplan is provided in the table below.

Table 5. The project overall workplan

	Yr1 Q1	Yr1 Q2	Yr1 Q3	Yr1 Q4	Yr2	Yr3	Yr4	Yr5	Yr6
Project Inception									
Component 1: MRV									
Component 2: Policy de-risking									
Component 3: Financial de-risking									
Component 4: Financial incentives									
Interim Independent Evaluation and final independent evaluation									