



Republic of Armenia



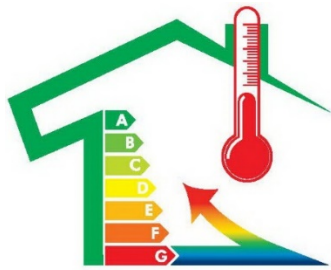
Armenia Green Climate Fund Project

Overcoming barriers in financing Energy Efficiency

9th International Forum

Energy for Sustainable Development

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**DE-RISKING AND SCALING-UP INVESTMENT
IN ENERGY EFFICIENT BUILDING RETROFITS**

Kiev

2018 November 15

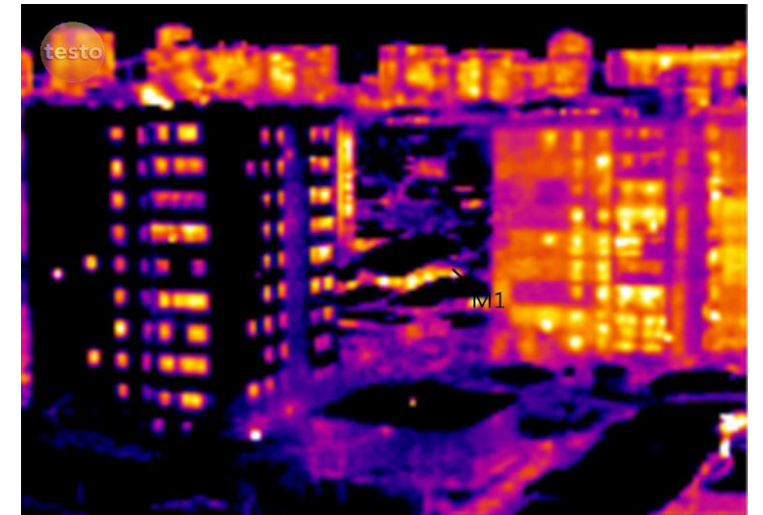
“De-risking and Scaling-up Investment in Energy Efficient Building Retrofits” Project

The Project objective: ensure greenhouse gas emissions reduction

- **Where:** residential and public buildings
- **How:** thermal insulation and improving efficiency of energy consumption, use of renewable energy sources
- **Toolkit:** complex/integrated efforts, including: legislative and organizational improvements, combination of the Green Climate Fund 20 million USD grant resources with other financial instruments including loans, municipal budgets, leveraged private sector investments and active involvement of beneficiaries.

Why the Building Sector?

- Energy consumption in buildings produces about 24% of total greenhouse gas emissions in Armenia
- About 30% of Armenia's population is considered “energy-poor”
- Applying energy efficiency and renewable energy measures in buildings can cut energy consumption by more than 50%.



Prehistory and from where we are moving

UNDP-GEF project (years 2010 to 2016) built certain capacity and prepared the ground for the GCF project

- Advanced legal framework
- Reliable partnership created with municipalities
- Data collection pioneered and best practices identified as per the demonstration projects
- Professional and technical capacity enhanced
- Certain level of awareness created

Project Proposal with GCF Funding

- Based on UNDP's experience in EE building sector in Armenia, the Project concept was developed and discussed with national partners and National Designated Authority to GCF
- Negotiations initiated and conducted with IFIs
 - UNDP CO facilitated negotiations between Yerevan Municipality and the European Investment Bank
 - Discussions on potential cooperation were conducted with French Development Agency, KfW, local and international banks and financial institutions

Project Basic Data

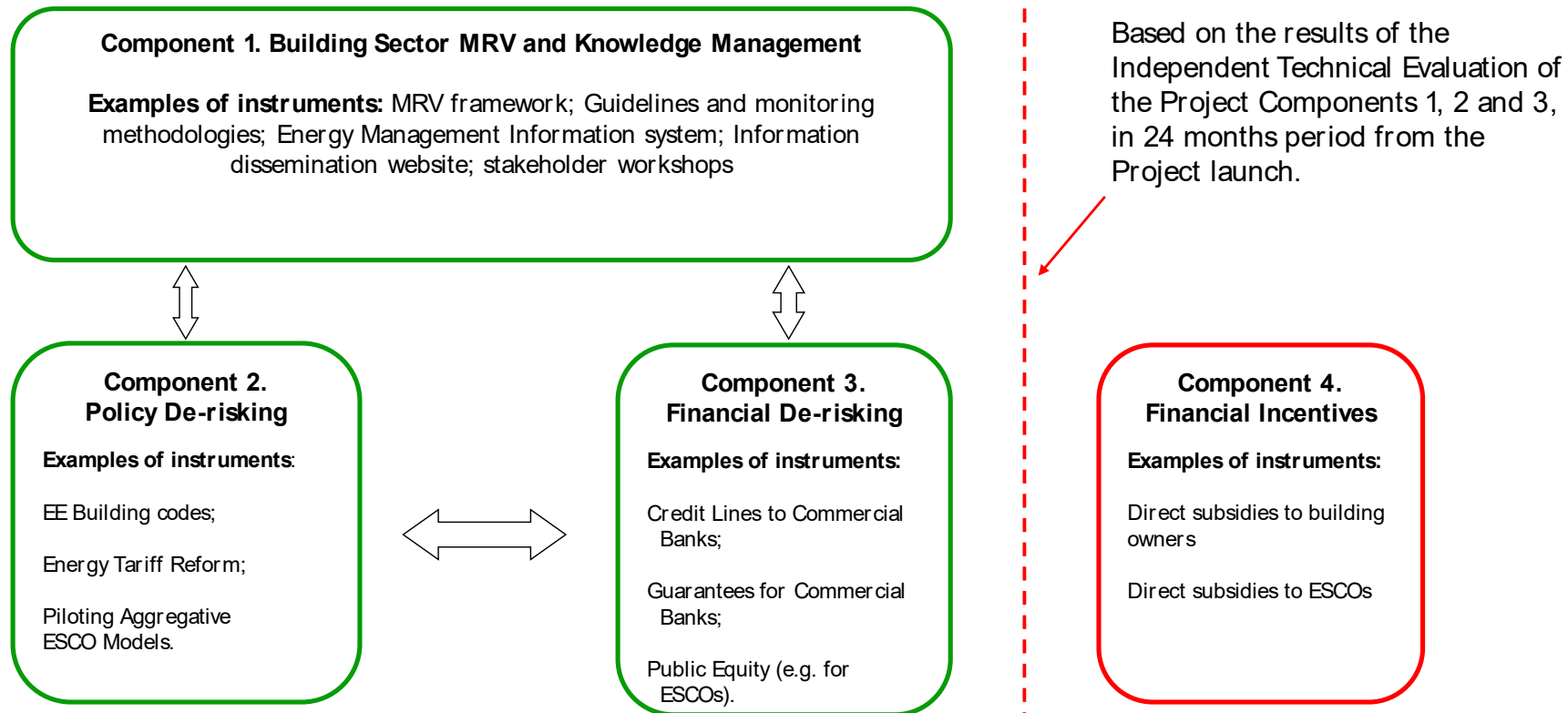
Executive Agency	UN Development Programme
National Implementation Agency	Ministry of Nature Protection of the RA
Main Partner / Beneficiary	Yerevan Municipality other Municipalities
Partners	Urban Development Committee of the RA Ministry of Infrastructures and Natural Resources of the RA Ministry of Labor and Social Affairs of the RA
Project Duration	6 years (2017 to 2023)
Green Climate Fund Grant	USD 20,000,000

Project Financial Data

Component	Financing Organizations	Necessary Financing (thousand USD)
Investment	GCF grant	14,000
	Yerevan Municipality co-financing	8,000
	Total	22,000
Technical Assistance	GCF grant	6,000
	UNDP co-financing	1,420
	Government (in kind)	420
	Total	7,820
Total Project value		29,820

De-risking approach for energy efficiency building retrofits

De-risking approach for energy efficiency building retrofits



"De-risking and Scaling-up Investment in Energy Efficient Building Retrofits" UNDP-GCF Project

1

Expected Results



6 000

Single-family individual
buildings

**10 000 average
per retrofit**

9 % average level of grant



290

Multi-family apartment
buildings

**120 000 average
per retrofit**

22 % average level of grant



150

Public buildings
(small)

**95000 average
per retrofit**

8 % average level of grant



23

Public buildings
(large)

**250 000 average
per retrofit**

5 % average level of grant

TOTAL



211

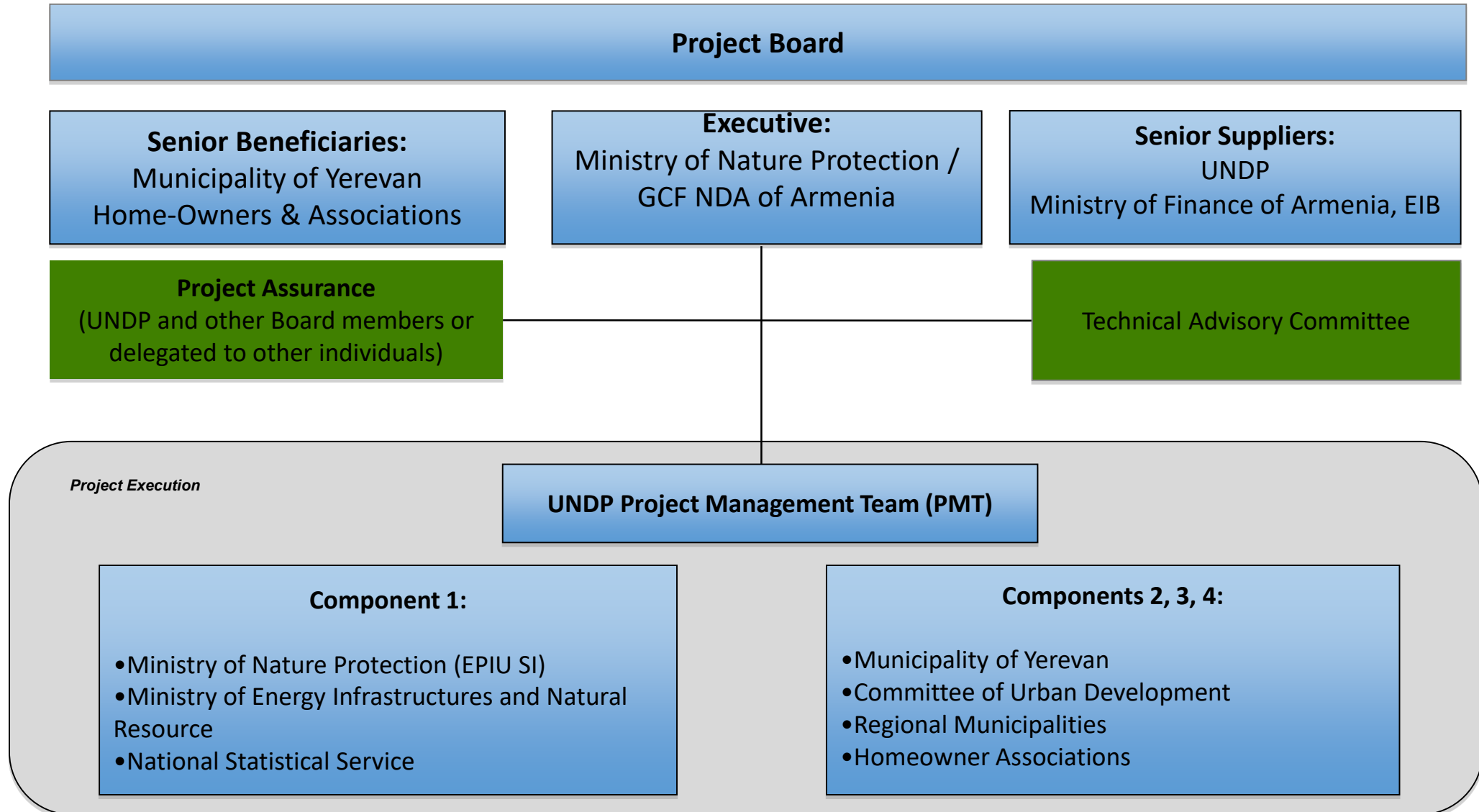
Energy savings (GWh/year)



1,104

Lifetime GHG savings, kt

Implementation Structure

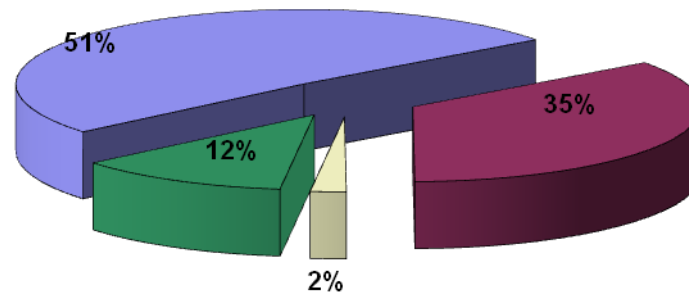


Housing stock of Armenia

- Housing stock – 93.1 million m² (as of 01.01.2017), including:
 - Multi-apartment housing stock: 27.6 million m² (18,917 buildings, 441,600 apartments), of which in urban areas: 25.9 million m² or 94%
 - Individual housing stock: 65.49 million m² (393600 buildings)
- The housing stock of Yerevan: 15.2 million m² (4,800 buildings, 232,000 apartments) or 54.3% of multi-apartment housing stock's total area
- Average housing provision: 31.4 m²/person

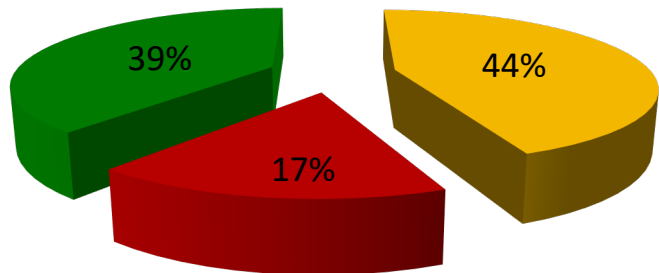
Description of multi-apartment housing stock

By number of floors



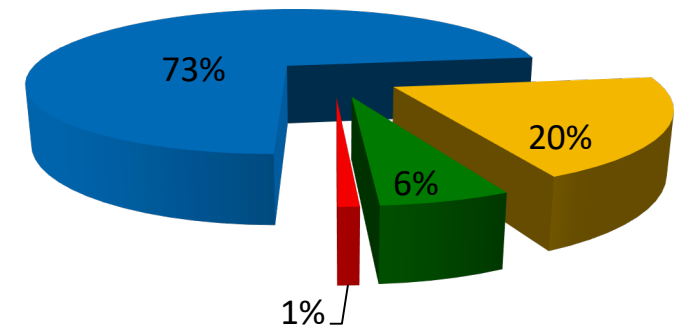
1 - 2 3 - 5 6 - 8 9 and up

Construction by years



1970-1990 after 1990 before 1970

By construction of walls



stone panel monolithic other

Management of multi-apartment buildings

- Privatization of multi-apartment housing stock led to a new institutional environment in the housing sector, with prevalence of private property (99% of the MABs are located in private ownership).
- MAB management bodies first emerged in 1995.
- As of 01.01.2017, out of 12,106 multi-apartment buildings in 48 cities of the Republic of Armenia:
 - Homeowner-established entities, mainly condominiums, manage 8,026 buildings (or 66.3%), and in Yerevan those manage 4,750 buildings of the existing 4,824 buildings (or 98.5%)
 - no established management bodies exist in 4,080 buildings (or 33.7%) located in 34 cities (out of 48 cities), and corresponding management powers are of the community heads, as set forth by law.

Key issues

- Development of targeted financial products for public and residential buildings, including cooperation with responsible partners (eg. capital renovation of schools, projects of community subsidies projects, scaling-up the possibility of ESCO models application by R2E2, etc.),
- Risks and delays linked to the possible changes in the status/roles of Project Responsible Partners as of Project Document.

How can grant/subsidy provision improve baseline EE financing and increase leverage from private and public sector?

Barriers

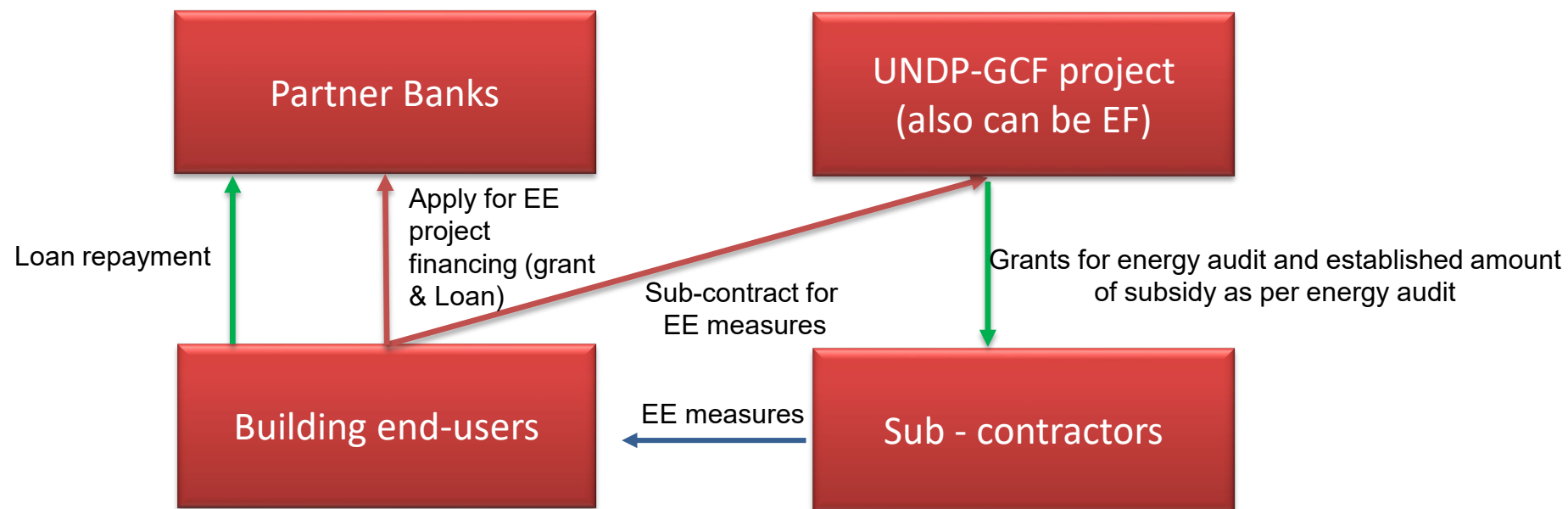
- Building maintenance practices in public and private sector are not adequate, and buildings are in poor state of repairs. Therefore when an energy retrofit is to be implemented it often includes non EE related measures (roof repairs, electrical installations replacement, plumbing/drainage replacement, etc.) which increase the costs and lead to long pay back periods and low IRRs.
- Substandard comfort levels in terms of inadequate lighting or under-heating are also common in buildings. Energy retrofits should of course provide for standard requirements for indoor comfort, but with a low base line due to under -heating / –lighting, the financial returns are again bellow thresholds for commercial lending.

Use of grants to remove key barriers and make projects viable

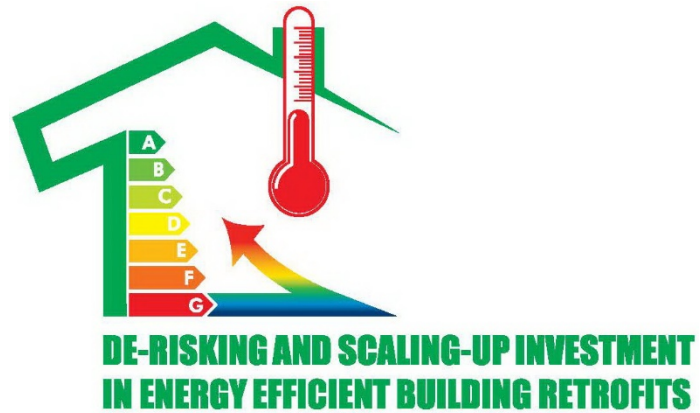
- Grant funds should be used to remove the obstacles for EE projects bankability under the usual terms – i.e. should support **capital repairs in a building, which are prelude** for preparing a 'normal' EE projects (not burden with a number of necessary measures but which does not yield a measurable savings).
- GCF project should make **collaboration agreements with EE Fund and/or others providing financing for EE in buildings**, so that upon the 'preparing a building for an EE project', it can go out into the market for implementing the EE specific measures under prevailing modes and with existing financing (non-grant) instruments.

Step-by-step: public buildings

- The Fund acts as an ESCO Fund and provides financing for energy retrofit of public buildings on an ESCO business model.
- Municipalities apply to Fund for (co)financing preparation of investment grade audits and in line their SEAP,
- Fund selects municipalities based on established criteria, procure services of a SME for preparation of investment grade audit comprised of all necessary measures to bring a building to the contemporary standards, inclusive of full implementation costs broken down in capital investments, works and services components, where **EE related and non-EE related measures are distinguished**, energy savings are calculated with payback period, possible technical and structural issues highlighted, and project financing structure being proposed, including the minimum amount of grant required to make investment viable, own co-financing
- Municipalities agree on the scope of energy retrofit and financial conditions as defined,
- SME is responsible for implementation and performance of the project,
- EFs provides (**own**) financing for capital investments (including a certain share of grant from UNDP as determined based on energy audit) paying directly to selected suppliers and transferring the equipment to the municipalities ownership,
- SME bears responsibility for financing its own services and works, which can come from its own resources, from commercial banks or even as a loan from the EFs,
- Municipalities repay the full investment to EFs (or deducted by a grant part as applicable) according to an agreed upon repayment plan,
- EFs pay the SMEs for their services and works over an agreed upon period,
- SMEs are still involved in monitoring and guarantying the performance of the project until they are fully paid off.



Option 2: with commercial banks, residential buildings



THANK YOU!

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