

# TECHNICAL ASSISTANCE FACILITY TO SUPPORT RENOVATION WAVE IN BULGARIA & INTERNATIONAL EXPERIENCE IN SCALING-UP ENERGY EFFICIENCY

MARCH 1, 2023

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**THE WORLD BANK**



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the European Union**



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# Diagnostic Assessment

## Objective

Conduct assessments to **identify market and capacity bottlenecks** that have prevented past EU Cohesion Policy programs and investments from realizing their full potential and being implemented at scale

<b>Strategy and Policies, Legislation and Regulations</b>	<ul style="list-style-type: none"><li>Review of legislation, regulations, policies, institutional arrangements, governmental action, data collection, management, and access, and training programs to <b>identify key gaps that constrained efficacy of the EU Cohesion Policy</b> and/or absorption of other funds in program implementation</li></ul>
<b>Market Assessment</b>	<ul style="list-style-type: none"><li>Assessment of <b>market demand and supply</b>, including identification of target building types, key characteristics of building owners, market potential, investment potential, energy and CO<sub>2</sub> savings potential, and public awareness of programs,</li></ul>
<b>Mapping of Funds</b>	<ul style="list-style-type: none"><li><b>Documentation of past, present and planned future funds</b> for building renovation, including the source of funds, operational period, applicability to the different building types, and type of financing.</li></ul>
<b>Mapping of Building Renovation Programs</b>	<ul style="list-style-type: none"><li><b>Review of past, current and planned programs</b> for building renovation for the four building types, including documentation of achieved or planned results.</li></ul>
<b>Identification of Gaps</b>	<ul style="list-style-type: none"><li>Definition of the <b>four major types of gaps in building renovation programs</b> - Policy &amp; Regulatory, Institutional, Market and Finance - that are common to all building types, as well as specific gaps for each of the four building types.</li></ul>
<b>Road Map for Addressing Gaps</b>	<ul style="list-style-type: none"><li>Development of a <b>proposed roadmap defining options to address identified gaps</b> and scale up the implementation of renovation programs, including stakeholder consultations to solicit views and feedback, and ensure that the recommendations yield the broadest impact.</li></ul>

# Framework for Assessment of Gaps to Building Renovation

## BUILDING TYPES

Multi-Family  
Apartment  
Buildings



Single Family  
Homes



Public  
Buildings



Commercial &  
Industrial  
Buildings



## GAPS

Common gaps for all building types and specific gaps for individual building types

Policy &  
Regulatory Gaps



Institutional  
Gaps

Market  
Gaps



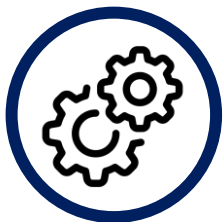
Financial  
Gaps

# Summary of key gaps



## Policy & Regulatory

- No stated **long-term implementation plan** for building renovation programs
- High **grant financing** has led to limited interest in non-grant financing instruments
- Regulated **retail energy prices** do not account for full cost recovery and provide disincentive to energy efficiency.
- HOAs are unable to **utilize financing instruments**
- There is **no national renovation program** and LTRS targets for Single Family Home



## Market

- Number of **energy auditors** providing good quality audits is considered insufficient (Based on SEDA and industry inputs)
- Lack of **training materials and no certification program** for new auditors
- Stop-and-start nature of renovation programs and **lack of predictability**
- Projects **not economically attractive to ESCOs** due to long payback periods resulting from lower-than-market energy prices
- MAB renovation projects are managed by municipalities, often lacking the **necessary technical and management capacity**



## Institutional

- Limited **capacity for project implementation** in municipalities and central government agencies
- Overlapping and **limited coordination and communication** between building renovation programs and environmental and social programs
- Insufficient **information and communication** regarding the many benefits of energy efficiency improvement.
- Lack of definition of energy poverty (in progress)



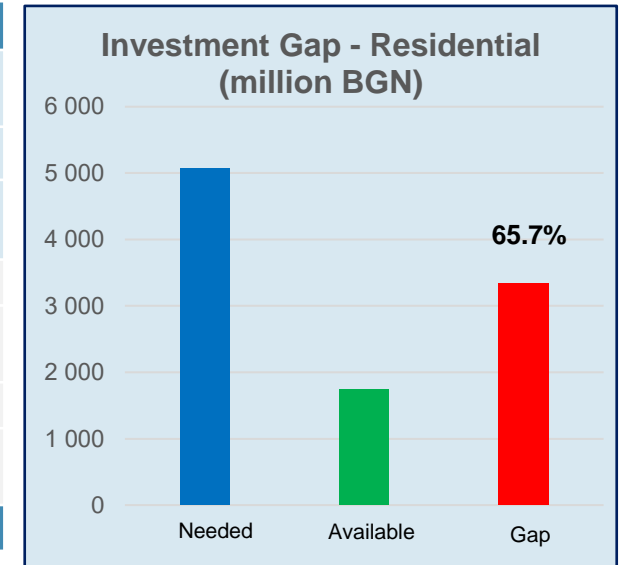
## Financing

- Almost all the financing for building renovation has taken the form of grant funding, leading to unrealistic expectations and a **reluctance to engage in financing instruments**.
- The **heavy reliance on grant financing** has limited the development of financial instruments by banks
- A large number of funds and programs with limited documentation and homogenization has led to low demand for financing because building owners are **unclear about available financing programs**
- There are no programs that allow the beneficiaries to **repay the renovation costs from the energy cost savings achieved**.

# Estimating the Investment Gap

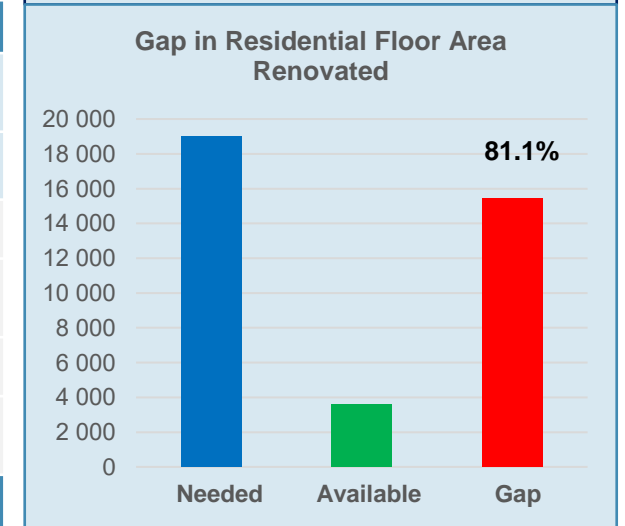
## LOW ESTIMATE - Based on EIB Market Assessment Scenario A (energy measures only)

Period 2021-2030	Needed to meet LTRS Targets*	Available Funding	Investment Gap		Floor Area Renovated by 2030 (Thousand m <sup>2</sup> )		
	Million BGN	Million BGN	Million BGN	%	LTRS Target	Committed	Gap (%)
Source	EIB	RRP, PDR, EBRD	Calculated	Calculated	LTRS	Estimated based on RRP	Calculated
Single Family Homes	Not specified in LTRS and the EIB Market Assessment Report						
Multi-Family Apartments and Single Family Homes	5,073	1,739	3,335	65.7%	19,027	3,600	81.1%
Public Buildings	261	693	0	0.0%	921	1,400	0.0%
Commercial & Industrial Buildings	639	286	353	55.3%	2,256	866 buildings	N/A
<b>Total</b>	<b>5,973</b>	<b>2,717</b>	<b>3,688</b>	<b>54.5%</b>	<b>22,204</b>	<b>N/A</b>	<b>N/A</b>



## HIGH ESTIMATE - Based on EIB Market Assessment Scenario C (energy measures plus structural and general installation costs)

Period 2021-2030	Needed to meet LTRS Targets*	Available Funding	Investment Gap		Floor Area Renovated by 2030 (Thousand m <sup>2</sup> )		
	Million BGN	Million BGN	Million BGN	%	LTRS Target	Committed	Gap (%)
Single Family Homes	Not specified in LTRS and the EIB Market Assessment Report						
Multi-Family Apartments and Single Family Homes	6,595	1,739	4,856	73.6%	19,027	3,600	81.1%
Public Buildings	340	617	0	0.0%	921	1,400	0.0%
Commercial & Industrial Buildings	831	235	596	71.7%	2,256	866 buildings	N/A
<b>Total</b>	<b>7,766</b>	<b>2,591</b>	<b>5,452</b>	<b>66.6%</b>	<b>22,204</b>	<b>N/A</b>	<b>N/A</b>



(\*) The Investment needed is taken from the EIB Market Assessment Report. The available funding is from RRP plus estimated amounts from other funds (PDR, EERSF, and NTEF). The investment needs and the gap in the MAB and C/I sectors are likely to be higher because these calculation do not include any increases due to inflation in costs from 2022 to 2030.

# Roadmap – Summary of Main Action Areas



## Policy & Regulatory

1. Develop and disseminate **long-term implementation plan** for reaching renovation targets with declining grants
2. **Targeted social policy** and financial support instruments for energy poor households
3. **Modify Condominium Ownership Management Act** to facilitate HOA renovation decisions
4. Improve regulatory framework to **facilitate ESCOs** and energy performance contracting
5. Develop a national **digital registry** of Buildings



## Market

1. Develop **improved training materials** and establish formal training and certification program to increase the number of skilled auditors
2. Develop **standardized national catalog** of technical measures for building renovation
3. Facilitate and promote **development of energy services market** and conduct ESCO training & accreditation
4. Develop and conduct **training programs for construction workers** to increase capacity



## Institutional

1. Establish a formal **coordination mechanism** among authorities responsible for renovation programs
2. Design and conduct information and **communication campaign** for building owners and other stakeholders
3. Develop and implement formal TA and **capacity building program for municipalities**
4. Develop a formal measurement and verification (M&V) approach and **require mandatory reporting** of M&V results in a common platform



## Financing

1. Provide a **clear signal that grant financing will be reduced** and develop instruments to cover finance needs
2. Develop and disseminate to all stakeholders **a catalog of funding programs**, terms & conditions, and eligibility criteria
3. Establish **public ESCO or Super ESCO** to finance public sector investments in building renovation
4. Establish **credit lines combined with TA and some grant** support for SFH and commercial buildings

# Public Sector EE Revolving EE schemes offer a number of benefits

Revolving EE schemes combine easier access to financing, economies of scale, streamlined processes, and sustainability

## Why use a revolving EE schemes mechanism?

Fills the **gap of financing** and assures **predictable flow of funds** to plan and implement EE in additional facilities

Predictable flow of funds



Easier access to financing



Allows for financing when **commercial banks are unable or unwilling** to provide loans  
Can offer financing at **preferential terms**, reduces **public debt**

Economies of scale



Enables **pooling of funds** from government, IFIs, and commercial financing  
Allows **bundling of projects** and **lowers transaction costs**

Targets **centralized implementation arrangements** to support scale-up

Streamlined processes



Support to market development



Sets the stage for eventually bringing in **commercial financing**, **ESCOs**, and other **private sector actors**

Allows **standardization of documents and procedures**

Provide the basis for long-term sustainability, thanks to the **capture of energy savings through budget reflows and revolving scheme features**

Long-term sustainability

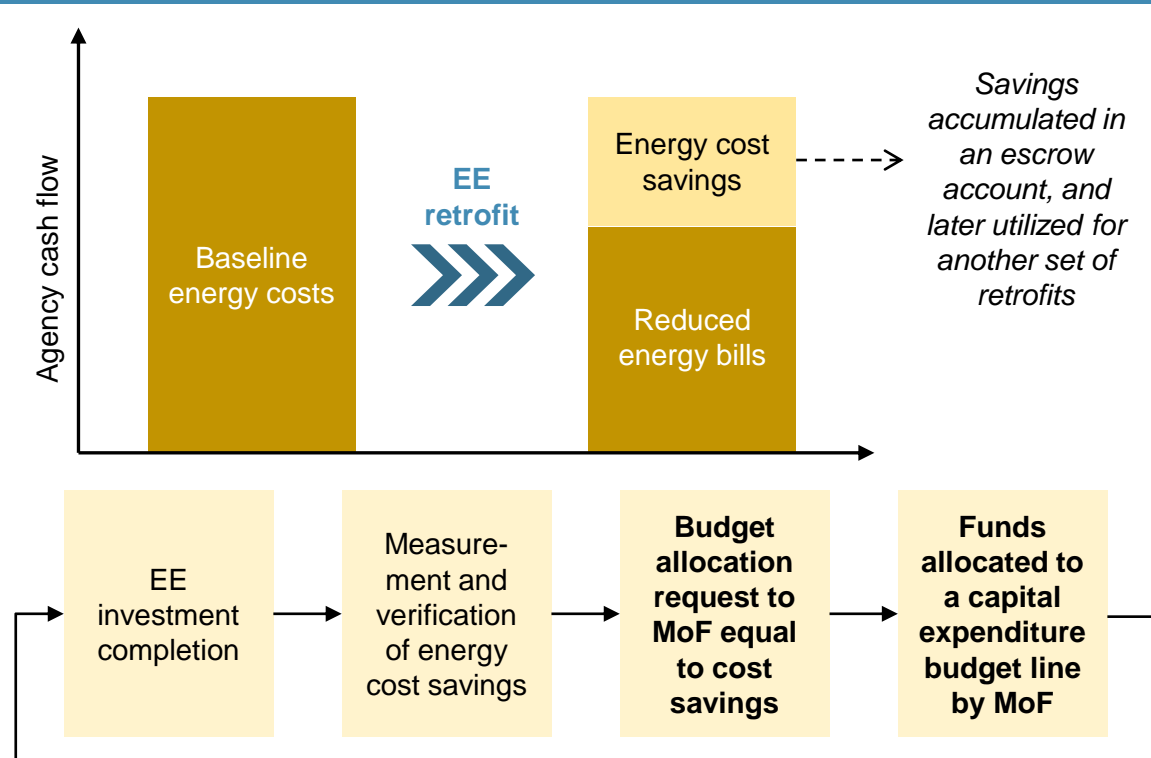


- Governments should **move towards revolving EE schemes** and, to the extent possible, **sustainable financing mechanisms** for public sector EE
- The schemes can be established **within an existing institution**, or as a **new independent entity** with fiduciary accreditation
- Revolving EE schemes **differ across countries** to reflect the various local **political, legal and regulatory environment** as well as the different **government priorities**

# Public Sector EE Several options are available for setting up revolving EE schemes

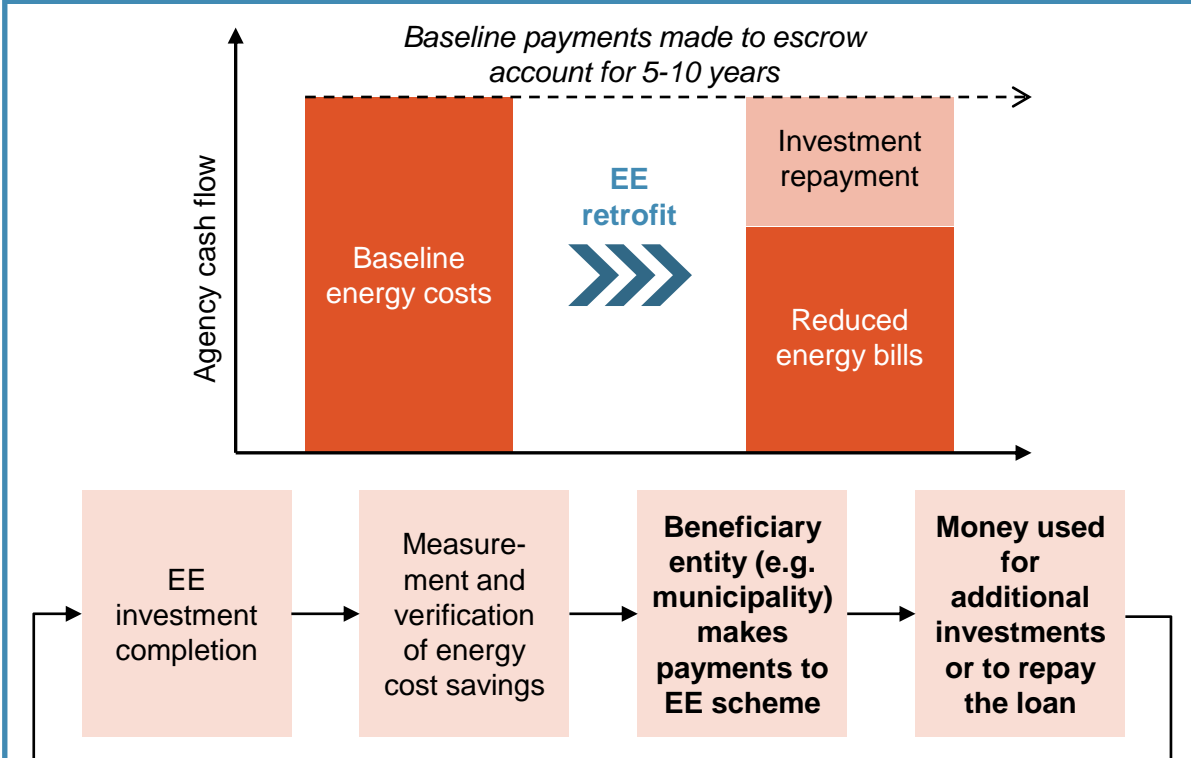
The two main alternatives are the energy savings capture model and the energy service agreement model

## Energy Savings Capture Model



- Typically used where the EE scheme is **institutionally housed within a national Government ministry**
- Operates within the **public budget** and **public procurement law**

## Energy Service Agreement (ESA) Model



- Typically used where the EE scheme is an **independent legal entity operating outside a line ministry** (the entity could be owned by the Gov't)
- Operates **outside the public budget system** and public procurement system, i.e., under **commercial law**

Both models could allow for some portion of investment to be used for structural improvements and improving indoor comfort levels



## Public Sector EE Key Lessons Learned

There is a **significant risk of limited continuation** of building renovation programs once concessional finance runs out

Government **project management units (PIUs)** suffer from a **loss of technical capacity** or are **dismantled** once individual projects/programs are completed

Revolving schemes can ensure the **sustainability of EE programs, EPCs and M&V** become more important

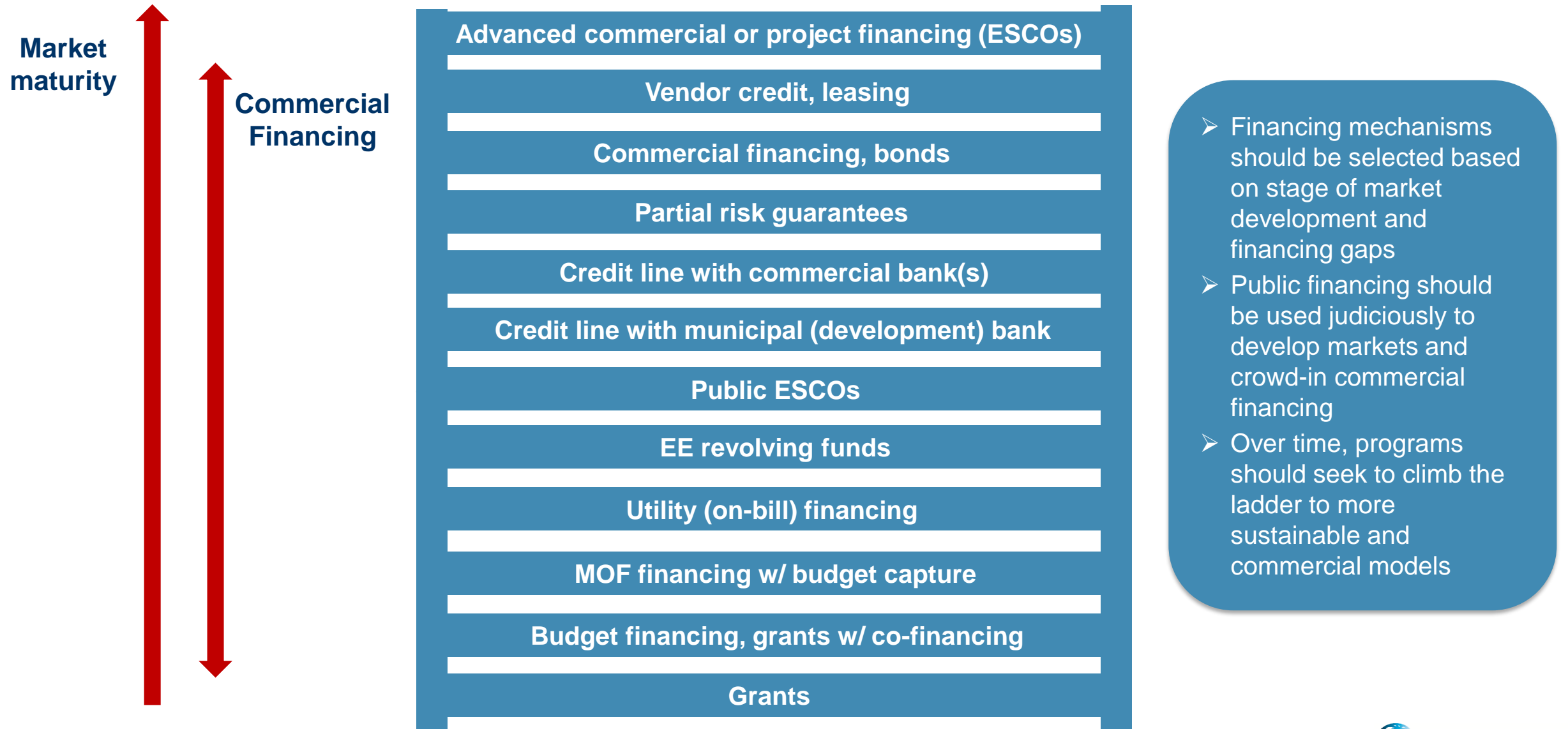
Energy audits need to consider **structural soundness, seismic resilience, underheating, safety**, etc. to avoid unsustainable renovations and ensure investments can payback

New institutions may require **legislative changes, good governance and budget provisions** for operating costs

Plans for **future business planning, recapitalization**, staffing, etc. to be done before project closure

## Public Sector EE Revolving EE schemes offer a number of benefits

Revolving EE schemes combine easier access to financing, economies of scale, streamlined processes, and sustainability



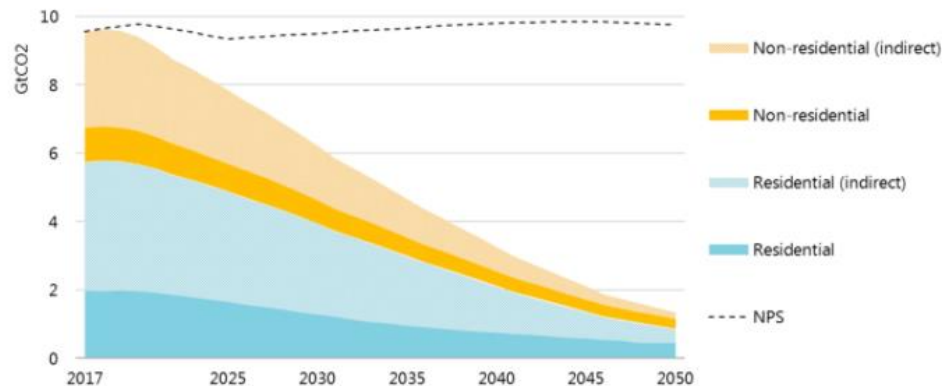
# Residential EE The buildings sector needs to scale up its contribution to economy decarbonization

In order for this to happen, public intervention has to focus on addressing the key types of barriers to residential EE financing

## The buildings sector will need to scale up its contribution to GHG emission reduction by 2050

- **Direct emissions** from fossil fuel use in buildings will have to **drop by 75% by 2050** in the IEA's Faster Transition Scenario, a steeper percentage reduction than most other sectors
- **Energy efficiency and demand-side flexibility** will be **equally essential** to relieve pressure on the power sector, given the significant share of electricity demand in buildings

## Buildings-related CO<sub>2</sub> emissions in IEA's Faster Transition Scenario, 2017-2050



Notes: NPS = New Policies Scenario; Indirect CO<sub>2</sub> emissions result from upstream generation of electricity and heat used in buildings. IEA 2019. All rights reserved.

Source: IEA 2019

## This will require that governments act to address the key types of barriers to residential EE financing

Key types of barriers	Possible public interventions (selected)
<b>i</b> Legal and regulatory barriers	<ul style="list-style-type: none"> <li>• <b>Legal/regulatory reforms</b> to strengthen HOAs, enable institutions to finance residential EE investments</li> </ul>
<b>ii</b> Implementation capacity limitations and lack of awareness	<ul style="list-style-type: none"> <li>• <b>Technical support</b> to homeowner associations (HOAs), households, maintenance companies, utilities, and municipalities</li> <li>• <b>Awareness campaigns</b> to inform consumers about the potential and benefits of EE investments</li> </ul>
<b>iii</b> Investment profitability (net present value)	<ul style="list-style-type: none"> <li>• <b>Credit lines</b> to partnering financial institutions</li> <li>• <b>Funds offering low-interest loans/ repayable grants</b>, potentially leveraging financial intermediaries<sup>1</sup></li> <li>• <b>Investment grant support</b> to HOAs/households<sup>1</sup></li> </ul>
<b>iv</b> Investment risk profile and risk perception	<ul style="list-style-type: none"> <li>• <b>Loan guarantee schemes</b> for banks</li> <li>• <b>Energy savings guarantees</b> built into contracts</li> </ul>

Programs that are **successful in scaling up residential EE financing** address these **types of barriers**, with a range of possible **support mechanisms**

## Residential EE Key Lessons Learned

Basic building blocks need to be in place—**cost reflective energy pricing, regulations to establish HOAs**, common practice for homeowners to pay monthly dues (MABs), reasonable level of heating

Partial subsidies are recommended (typically 20-30%) to address issues of **high payback periods, structural soundness, seismic resilience, underheating, safety, low-income owners**, etc.

**Access to financing** should be simple, ideally with access to full project financing (loans, grants); financing can be public (e.g., reimbursable grants) until banks are willing to lend

**Institutional structures** need to be developed and funded to support **program implementation** (organization of program actors, provisions for training and outreach, technical assistance, help desk) and allow for **program adjustments, scale-up, development of future phases**

Lower **transaction costs** through **streamlining of processes, standard documents and templates, websites with prequalified contractors, case studies**, etc.



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