WESTERN BALKANS

RESIDENTIAL ENERGY EFFICIENCY MARKET ASSESSMENT

Workshop on Financing Energy Efficiency in the Residential Sector

Energy Community

November 18, 2021

WORLD BANK GROUP
Energy & Extractives

Agenda

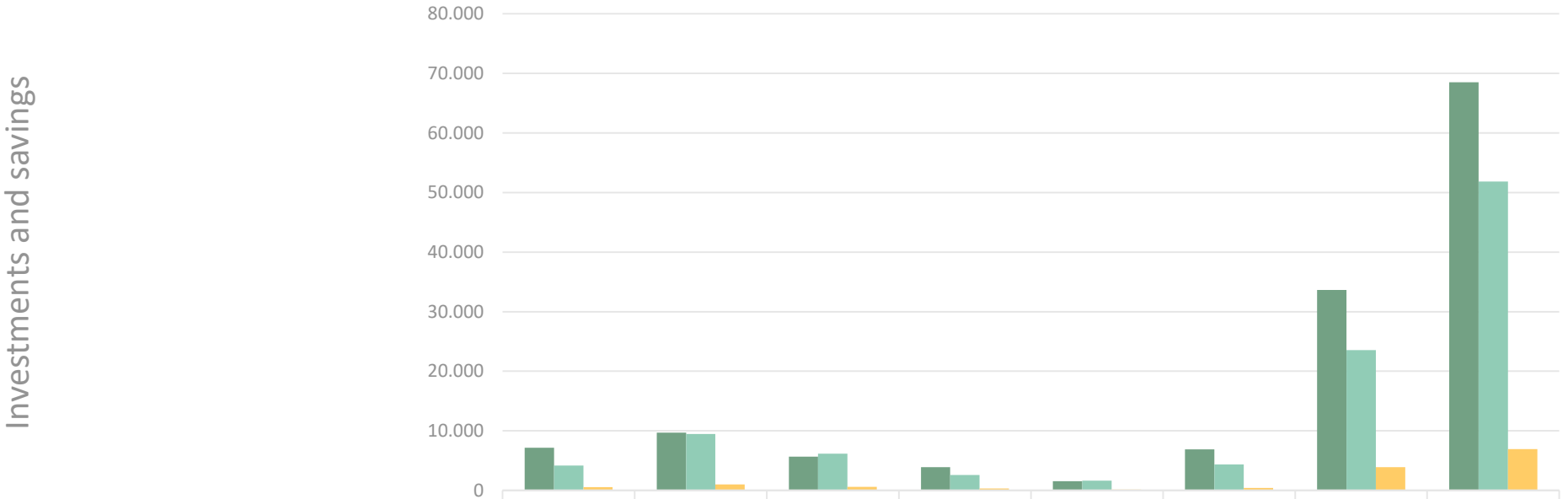
1. Market assessment results – technical and financial analysis
2. Gap analysis results for EE residential investments
3. Potential financing options to be further explored

Residential Energy Efficiency Market Analysis

Overall task

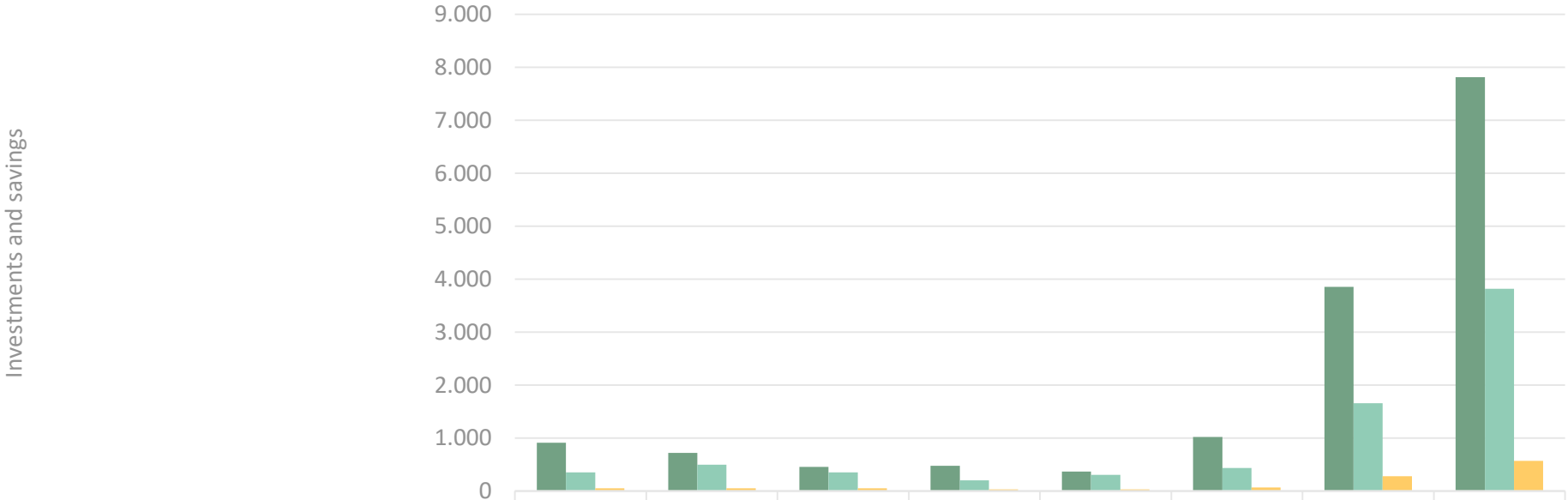
- Market assessment report covering the 6 countries – key technical and financial parameters for investments in different types of residential buildings:
  - Investments
  - Payback periods
  - Energy savings, etc.
- Analysis of different types of buildings (single family, multi-apartment buildings) and heating sources

Theoretical fuel savings potential - Single family buildings



	Albania	Bosnia and Herzegovina - FBiH	Bosnia and Herzegovina - RS	Kosovo	Montenegro	North Macedonia	Serbia	WB6 Potential
Theoretical fuel savings potential (GWh/y) - Standard interventions	7.173	9.713	5.655	3.911	1.532	6.882	33.646	68.513
Total investments required (MEUR) - Standard interventions	4.156	9.467	6.165	2.586	1.617	4.343	23.530	51.864
Total annual savings (MEUR) - Standard renovations	553	1.008	588	330	128	428	3.907	6.940

Theoretical fuel savings potential - Multi-Apartment Buildings



	Albania	Bosnia and Herzegovina - FBiH	Bosnia and Herzegovina - RS	Kosovo	Montenegro	North Macedonia	Serbia	WB6 Potential
Theoretical fuel savings potential (GWh/y) - Standard interventions	915	720	458	477	371	1.020	3.856	7.816
Total investments required (MEUR) - Standard interventions	354	500	356	204	308	438	1.661	3.820
Total annual savings (MEUR) - Standard renovations	55	51	51	34	34	68	279	572

Key conclusions

- **Payback periods of 10 – 15 years for full interventions -** due to low prices for energy carriers notably including biomass, coal, and – in some cases – electricity
- **For Multi-Apartment Buildings (MABs) up to 5 floors and over 5 floors** – there is a range of "profitability" depending on the fuel, but other barriers exist (decision-making, financial product availability)
- Heating devices (particularly solid fuel) are inefficient and improving them could yield huge energy, GHG, and health dividends (billions in health damage estimated)
- Important to focus on the least energy efficient buildings – but these households are likely to be the poorest households, more likely to be characterized as being in fuel poverty or energy poverty and also have less access to financial products / be less "bankable"
- This points to a need for targeted support schemes

Residential Energy Efficiency - Gap Analysis

Readiness for EE residential investments – key conclusions and recommendations that countries may not be thinking about

- In many countries successful pilot-level support schemes have been implemented / are being implemented through the public sector support (possibilities for sharing of ideas).
- In Serbia, N. Macedonia, Montenegro, and BiH there is a good legal situation related to the bankability of multi-apartment buildings (MABs) and existence of building-level associations of owners (for the purposes of this report, this is described as Homeowners Associations (HOAs))
- BUT financing to these buildings / HOAs as legal entities is not developed. In Kosovo and Albania, the underpinning legal situation / enforcement for forming HOAs still needs to be more fully developed.
- Energy prices are low. In some cases where District Heating is an important source of energy (particularly Kosovo, BiH and Serbia), lack of consumption-based billing is a serious barrier to investment.
- On-bill financing (sort of energy performance contracting) is currently being implemented in Serbia by a District Heating company with MABs and could potentially be replicable in other district heating areas or even with electricity distribution companies.
- Illegal dwellings (or part of dwellings) are an important issue in many countries and there may be a scope for EE investments in conjunction with the legalization process.

Recommendations valid for all the countries

In addition to energy performance certification, building renovation strategy, etc:

- Support municipalities in supervision of EPBD (MEPS, energy certification requirements)
- Legally define energy poverty and conduct detailed analysis of its prevalence – for specific programs
- Support preparation of technical and financial documentation for renovation projects in MABs
- Support HMCs in developing their role of arranging lending for MABs – potentially including financial support
- Provide support mechanisms for poorer (energy-poor) households for implementing EE in general and in MABs and solid-fuel based heaters in particular
- Incorporate tax revenues into modelling of impacts of EE support programmes – which will likely demonstrate that subsidy programmes are budget neutral due to de-greying of the renovation market and increased spending in more productive parts of the economy which are not energy consumption
- For scale up, sustainability, and reaching less “bankable” households, innovative financial mechanisms are possible

Country-specific recommendations

- See Annexes to this presentation
- Included in separate report and can be shared via country-level workshops as requested

Residential Energy Efficiency – Financial options

Options analysed for 4 criteria

Criteria	Description of criteria scoring
Scalability	**Green**: Can be expected to reach much / most of the market (e.g. > 50%) in short-medium term **Orange**: Can be expected to reach a significant portion of the market (e.g. 20 – 50%) in short-medium term **Red:** Can be expected to only reach a smaller sub-section of the market (e.g. <20%) in short-medium term
Leverage	**Green**: Can be expected to be high – over 10:1 private finance versus public finance **Orange**: Can be expected to be medium – between 4:1 and 10:1 private finance versus public finance **Red:** Can be expected to be low – between less than 4:1 private finance versus public finance
Readiness	**Green**: Institutional set up and legal requirements are relatively straightforward and typically in place in the region **Orange**: Institutional set up and legal requirements are somewhat complex but do exist in the region and elsewhere **Red:** Institutional set up and legal requirements are highly complex and do not exist in the region and only in limited cases elsewhere
Sustainability	**Green**: Can be expected that the investment mechanism continues beyond a period of project implementation / state financial intervention **Orange**: Can be expected that the investment mechanism continues beyond a period of project implementation – but requiring some level of continued state financial intervention **Red:** Not be expected that the investment mechanism would continue beyond a period of project implementation – unless continued significant state financial intervention

Options analysed for 4 criteria

Criteria	Option 1: Public grant programmes	Option 2: Private sector mandates (including Energy Efficiency Obligation schemes)	Option 3: EE Fund to provide direct loans	Option 4: Commercial financing (loans and credit enhancement tools)	Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators	Option 6: Enhancing green mortgages	Option 7: On-bill financing	Option 8: Property Assessed Clean Energy (PACE) loans
Scalability								
Leverage								
Readiness								
Sustainability								

Key conclusions / recommendations

- Grant programmes are already happening – but difficult to scale to a full market impact given budget limitations. **But** grants can augment other options.
- Most promising options include:
  - Option 2: Private sector mandates (including Energy Efficiency Obligation schemes) – linked to Option 7: On-bill financing
  - Option 4: Commercial financing (loans and credit enhancement tools) – particularly using guarantee mechanisms and targeted subsidies (for poorer households)
  - Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators – ESCOs for distributed renewable energy (for single family households) and Aggregators for MABs

Option 2: Private sector mandates (including Energy Efficiency Obligation schemes) linked to Option 7: On-bill financing

Option 2: Private sector mandates (including Energy Efficiency Obligation schemes) linked to Option 7: On-bill financing

Basic description of the mechanism:

- EEO scheme introduced requiring savings but with technical assistance to develop on-bill financing mechanisms
- If just EEO, then the distribution companies can meet the mandate in a flexible way
- One way could be on-bill financing
  - Consumer pays for EE measure through energy bills (DH, electricity, natural gas)
  - Treated as a loan or as a service - part of services offered by the utility and integrated into tariffs
  - Funds may come from utility (which may be offered access to low-cost public funds) or third-party financing bodies
  - Loan may be attached to meter/property rather than individual

Lessons and caveats:

- EEO is an option in most countries of the region – but needs to be established
- Secondary legislation (model contracts) could help in wide-scale up-take.
- Building-level metering necessary for MABs and rules on allocation of costs
- Consumption-based billing necessary to have financial payback for end-users
- A form of on-bill financing where the utility is acting as an ESCO is currently underway in Šabac, Serbia
- Grants (especially for poorer households) and guarantee mechanisms can augment the investments

Option 4: Commercial financing (loans and credit enhancement tools)

Option 4: Commercial financing (loans and credit enhancement tools)

Basic description of the mechanism:

- Credit lines extended to commercial banks for on-lending for energy efficiency
- Should be supported by credit enhancement tools - including guarantees and hierarchical debt (and could include interest rate subsidies and / or grants)
- Involves capital by IFIs and / or government institutions (e.g. development banks), and commercial banks (minimum co-financing levels may be stipulated)
- Governments / public sector can support via grants to banks / interest rate subsidies / support of technical assistance / guarantee mechanisms (first loss)

Lessons, caveats:

- Already ongoing via EBRD – but without guarantee mechanisms or government direct involvement – and almost entirely for single-family households
- MABs will require additional enhancements (guarantee mechanism and technical assistance)
- Targeted grants could be incorporated – especially for poorer households
- Minimum EE standards and simple processes must be introduced with banks

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

Basic description of the mechanism:

- ESCOs undertake and aggregate EE or RE interventions across multiple consumers – this has been quite successful in single-family households for renewable energy installations (PV)
- Can be supported through government assistance – cheap financing, guarantee mechanisms on investments, technical assistance to develop the projects for ESCOs to invest
- For MABs, a “Super ESCO” or an “aggregator” could be established by government - acts as an ESCO itself (primarily targeting the public sector) and facilitates the development of private ESCOs through commercial and technical support for MAB investments
- Super ESCO / aggregator is a government established entity with a technical as well as financial remit - could be affiliated to a state-owned energy firm
- Capitalisation of a Super ESCO / aggregator comes from government budget / donor funds but may also leverage commercial finance later (as banks become interested in the sector)

Lessons, caveats:

- Energy performance contracting / ESCO models are rare in the private residential sector for EE – but aggregator model is working in, for example, Lithuania for MAB investments
- For distributed renewable energy installations (notably PV installations), there is a much higher likelihood - the ESCOs install the PV installations based on a monthly / annual fee and the building owner retains ownership and obtains income from selling electricity to the grid (or saves on their energy costs).

Contact

World Bank:

Tamara Babayan - tbabayan@worldbank.org

Pedzi Makumbe - pmakumbe@worldbank.org

Consultant team:

Seth Landau - seth@ecoltdgroup.com

Marijan Gajšak - marijan@ecoltdgroup.com

David Williams - david.williams@eca-uk.com

ecoltdgroup.com

Residential Energy Efficiency Market Assessment – World Bank

Annex I – Technical and Financial Assessment

18 November 2021

Agenda

1. Methodology input data
2. Technical analysis
3. Financial analysis
4. Economic analysis
5. Results of technical and financial analysis – macroeconomic
6. Results of technical and financial analysis – Per country

Methodology input data

- Three groups of buildings
  - Single family houses, small/medium multi-apartment buildings (MABs), large buildings (MABs)
- Sources mainly national typology documents, experts experience mainly based on energy audits
- Costing and technical parameters based on market conditions, energy audits and national documentation
- Regional geographic data – model offers variety of locations, as benchmark used capitals as points of buildings concentration

Technical analysis

- Two scenarios – standard, deep renovation
- Bottom up approach – for every type of buildings
- Conducted per type of relevant heating energy source
- Application of energy efficiency level
- Costing included based on relevant experience – energy audits
- Three different energy utilisation areas examined separately in the model:
  - Heating – this is the main type of energy consumption
  - Domestic hot water (DHW) consumption
  - Cooling – colling estimates are done under presumption that all cooling uses electricity and only savings resulting from improved building envelope were taken into account – except in the “deep renovation” case

Financial analysis

Two cost/benefit analyses:

- Non-leveraged
  - Based on result of technical analysis, financial savings resulting from energy savings were compared with investment costs on a per building level
  - Discount rates specific to each country were used to calculate Net Present Value
- Leveraged
  - financial analysis from the perspective of building owner/owners was carried out for the various buildings. A loan with a 20% investment grant was used as a benchmark.
  - assumed that owners would not participate with their own funds in the investment.
  - a 2% annual increase of energy price was applied to the model and leveraged 15-year Internal rate of return (IRR) and NPV were calculated on a per building basis.

Financial analysis

- Ssensitivity analysis to assess impact of different level of grants to NPV and IRR.
- The ratio of credit / investment costs versus income was also calculated using an average median salary for every country as a benchmark.
- Additionally, the ***net*** cost to income ratio was calculated

  = energy/fuel cost savings - costs of the investment

Economic analysis

- Monetised co-benefits/externalities calculated:
  - **GHG emissions avoided**
  - **Estimated property value increase**
  - **Air pollution benefits**
- Potential investments, levels of energy consumption, potential levels of energy savings, and potential financial savings scaled up to a country and regional level

Standard interventions

			Houses	Houses	Houses	Houses	Houses	Apts	Apts	Apts	Apts	MAB	MAB	MAB
			Electricity	DH	Firewood	NG	Coal	Electricity	Firewood	NG	DH	Electricity	DH	NG
			Intervention applicable Yes/No											
		Unit	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No
Standard interventions														
EE Outer walls	Heating	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Cooling		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EE Windows	Heating	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Cooling		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Roof improvement	Heating	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Cooling		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thermostatic valves	Heating	Pieces	No	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Hydraulic balance valves		Pieces									Yes	Yes	Yes	Yes
Efficient boiler/stove	Heating	Pieces	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes

Deep renovation

			Houses	Houses	Houses	Houses	Houses	Apts	Apts	Apts	Apts	MAB	MAB	MAB
			Electricity	DH	Firewood	NG	Coal	Electricity	Firewood	NG	DH	Electricity	DH	NG
			Intervention applicable Yes/No											
		Unit	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No	Yes/ No
Standard interventions														
EE Outer walls	Heating	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Cooling	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EE Windows	Heating	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Cooling	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Roof improvement	Heating	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Cooling	m^2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thermostatic valves	Heating	Pieces	No	Yes	No	Yes	No	No	No	No	Yes	Yes	Yes	Yes
Hydraulic balance valves		Pieces									Yes	Yes	Yes	Yes
Efficient boiler/stove	Heating	Pieces	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No	No	Yes
Deep renovation related interventions														
Solar Water Heater	Heating	Pieces	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Air-sourced heat pump	Heating	Pieces	No	No	No	No	Yes	Yes	No	No	No	No	No	No
Ground-sourced heat pump	Heating	kW	Yes	No	No	No	No	Yes	No	No	No	No	No	No

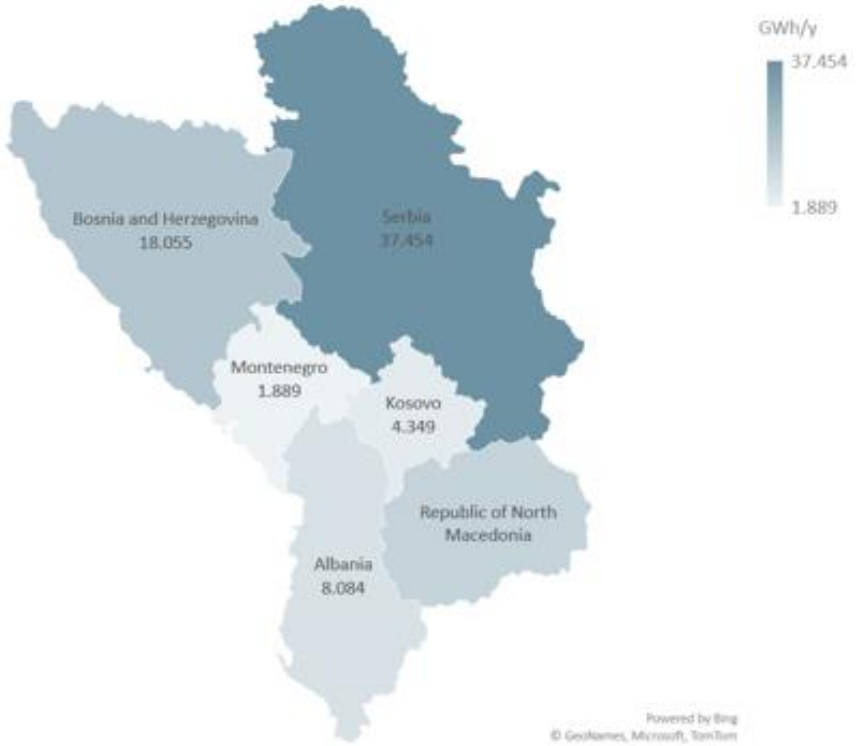
ECO.
DEEPER THINKING

Results of technical and financial analysis

Macroeconomic overview and per country

ecoltdgroup.com

Theoretical energy savings potential in each of the WB6 countries



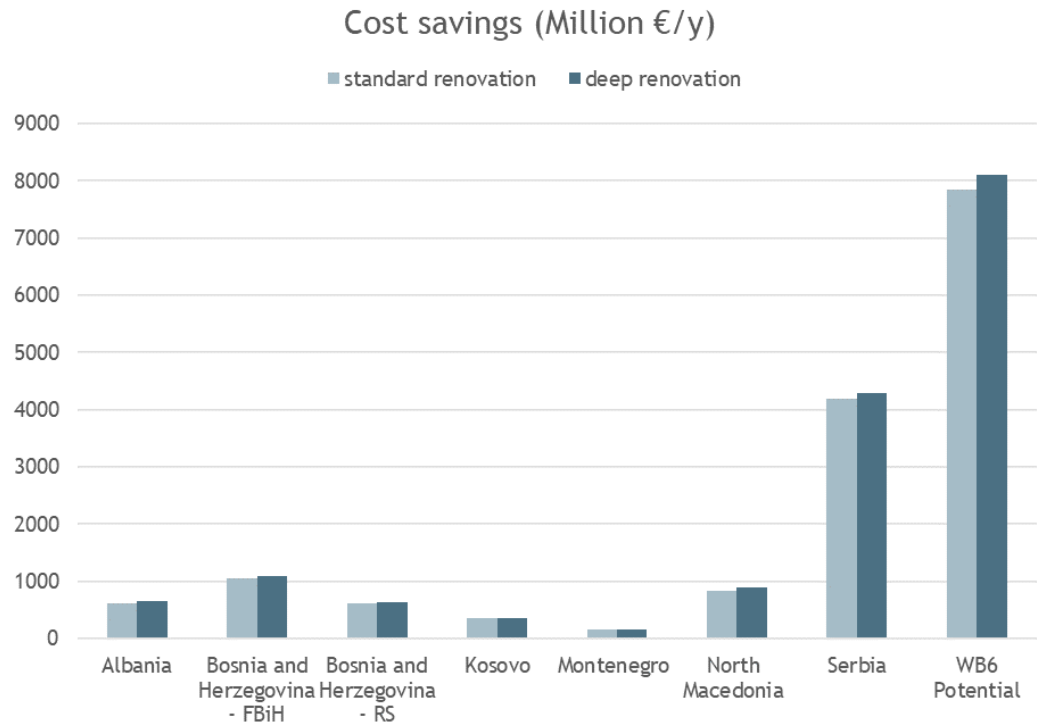
Financial and economic analysis – WB6 – general conclusions

- The technical analysis overall shows a huge potential for savings across the board. However, the financial / economic analysis overall shows that:
  - **For single-family houses,** the costs of investment in many cases outweigh the energy savings – due to low prices for energy carriers notably including biomass, coal, and – in some cases – electricity.
  - **For Multi-Apartment Buildings (MABs) up to 5 floors and over 5 floors**
    - There is a range of "profitability" depending greatly upon the energy carrier being used
    - For those buildings using electricity and LPG there is significantly better financial justification for investments
    - For those buildings heating on district heating, wood, and other energy carriers, the specific country situation (and likely technical situation of the building) needs to be analysed on a per-investment basis
  - But the cost / benefit is not the only aspect to look at – also property value increases, increased comfort, etc.

Financial and economic analysis – WB6 – general conclusions

- To have better financial performance, it would be important to focus on the least energy efficient buildings
- The analysis of the market shows that these households are likely to be the poorest household - have less access to financial products / be less “bankable”. This points to a need for targeted support schemes.

Cost savings (Million EUR/y)



Estimates of health costs from inefficient solid fuel heaters assuming 5000 EUR/device per year

Country	Number of houses/ buildings	Estimated health cost - national level (annually)
Albania	326,000	EUR 1.63 billion
Bosnia and Herzegovina - FBiH	346,500 - firewood	EUR 1.73 billion
	40,240 - coal	EUR 0.20 billion
Bosnia and Herzegovina - RS	226,000-firewood	EUR 1.13 billion
	26,200 - coal	EUR 0.13 billion
Kosovo	150,000	EUR 0.750 billion
Montenegro	107,000	EUR 0.535 billion
North Macedonia	306,000	EUR 1.53 billion
Serbia	1,027,000 - firewood	EUR 5.13 billion
	278,000-coal	EUR 1.39 billion

E CO.
DEEPER THINKING

Albania - Technical and Financial analysis

ecoltdgroup.com

Albania - Needs and potential at the entire sector level

Parameter	Unit	Value
Current energy consumption-heating	GWh/y	10,012
Current energy consumption-cooling	GWh/y	2,421
Energy savings potential	GWh/y	8,084
Standard interventions		
Investment costs needed	Million €	4,570
Cost savings	Million €/y	625
CO2 emission reduction potential from the sector	MtCO2/y	6
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	N/A
Deep renovation		
Investment costs needed	Million €	7,199
Cost savings	Million €/y	652
CO2 emission reduction potential from the sector	MtCO2/y	7
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	N/A

Country-level analysis - guide

- Those building investments marked as High do not require a grant to have a positive Net Present Value (NPV) over a 20-year lifetime of the investments
- Those building investments marked as Moderate would require a grant between 0 and 50% to achieve a positive NPV.
- Those building investments marked as Low would require a grant of over 50% to achieve a positive NPV.

Albania – affordability analysis – Single family houses

Single family houses	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Albania				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 65%	Energy Savings up to 90%	No grant required	Grant required
Firewood	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 65%	Energy Savings up to 76%	Grant required	Grant required
LPG	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 68%	Energy/Fuel Savings up to 79%	No grant required	No grant required

Albania – affordability analysis – MABs up to 5 floors

MABs up to 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Albania				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 69%	Energy Savings up to 83%	No grant required	Grant required
Firewood	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 69%	Energy Savings up to 80%	No grant required	Grant required
LPG	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 74%	Energy Savings up to 84%	No grant required	No grant required

Albania – affordability analysis – MABs more than 5 floors

MABs more than 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Albania				
Electricity	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 60%	Energy Savings up to 82%	No grant required	No grant required
Firewood	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 60%	Energy Savings up to 91%	No grant required	Grant required
LPG	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 63%	Energy Savings up to 86%	No grant required	No grant required

E CO.
DEEPER THINKING

FBiH – Bosnia and Herzegovina - Technical and Financial analysis

ecoltdgroup.com

FBiH - Needs and potential at the entire sector level

Parameter	Unit	Value
Current energy consumption-heating	GWh/y	16,666
Current energy consumption-cooling	GWh/y	1,890
Energy savings potential	GWh/y	11,387
Standard interventions		
Investment costs needed	Million €	9,967
Cost savings	Million €/y	1,059
CO2 emission reduction potential from the sector	MtCO2/y	10
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	41
Deep renovation		
Investment costs needed	Million €	11,714
Cost savings	Million €/y	1,092
CO2 emission reduction potential from the sector	MtCO2/y	11
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	41

Country-level analysis - guide

- Those building investments marked as High do not require a grant to have a positive Net Present Value (NPV) over a 20-year lifetime of the investments
- Those building investments marked as Moderate would require a grant between 0 and 50% to achieve a positive NPV.
- Those building investments marked as Low would require a grant of over 50% to achieve a positive NPV.

FBiH – affordability analysis – Single family houses

Single family houses	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Bosnia and Herzegovina - FBiH				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 63%	Energy/Fuel Savings up to 70%	No grant required	Grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 63%	Energy/Fuel Savings up to 70%	No grant required	No grant required
Natural Gas	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 71%	Energy/Fuel Savings up to 76%	Grant required	Grant required
Coal	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 63%	Energy/Fuel Savings up to 68%	Grant required	Grant required

FBiH – affordability analysis – MABs up to 5 floors

MABs up to 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Bosnia and Herzegovina - FBiH				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 66%	Energy/Fuel Savings up to 79%	No grant required	Grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 66%	Energy/Fuel Savings up to 76%	No grant required	No grant required
Natural Gas	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 71%	Energy/Fuel Savings up to 80%	Grant required	Grant required
DH	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 66%	Energy/Fuel Savings up to 76%	Grant required	Grant required

FBiH – affordability analysis – MABs more than 5 floors

MABs more than 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Bosnia and Herzegovina - FBiH				
Electricity	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 75%	No grant required	No grant required
Natural Gas	HIGH	HIGH	MODERATE	LOW
	Energy Savings up to 68%	Energy/Fuel Savings up to 79%	Grant required	High level of grant required
DH	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 73%	Energy/Fuel Savings up to 82%	Grant required	Grant required

RS – Bosnia and Herzegovina - Technical and Financial analysis

ecoltdgroup.com

BiH RS - Needs and potential at the entire sector level

Parameter	Unit	Value
Current energy consumption-heating	GWh/y	9,839
Current energy consumption-cooling	GWh/y	1,064
Energy savings potential	GWh/y	6,668
Standard interventions		
Investment costs needed	Million €	6,521
Cost savings	Million €/y	620
CO2 emission reduction potential from the sector	MtCO2/y	6
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	23
Deep renovation		
Investment costs needed	Million €	7,667
Cost savings	Million €/y	640
CO2 emission reduction potential from the sector	MtCO2/y	6
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	23

Country-level analysis - guide

- Those building investments marked as High do not require a grant to have a positive Net Present Value (NPV) over a 20-year lifetime of the investments
- Those building investments marked as Moderate would require a grant between 0 and 50% to achieve a positive NPV.
- Those building investments marked as Low would require a grant of over 50% to achieve a positive NPV.

BiH RS – affordability analysis – Single family houses

Single family houses	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Bosnia and Herzegovina - RS				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 63%	Energy/Fuel Savings up to 70%	No grant required	Grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 63%	Energy/Fuel Savings up to 70%	No grant required	No grant required
LPG	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 71%	Energy/Fuel Savings up to 76%	Grant required	Grant required
Coal	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 63%	Energy/Fuel Savings up to 68%	Grant required	Grant required

RS BiH – affordability analysis – MABs up to 5 floors

MABs up to 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Bosnia and Herzegovina - RS				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 66%	Energy/Fuel Savings up to 80%	No grant required	Grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 66%	Energy/Fuel Savings up to 77%	No grant required	No grant required
Natural Gas	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 71%	Energy/Fuel Savings up to 81%	Grant required	Grant required
DH	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 66%	Energy/Fuel Savings up to 77%	Grant required	Grant required

RS BiH – affordability analysis – MABs more than 5 floors

MABs more than 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Bosnia and Herzegovina - RS				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 60%	Energy/Fuel Savings up to 76%	No grant required	Grant required
Natural Gas	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 61%	Energy/Fuel Savings up to 80%	Grant required	Grant required
DH	HIGH	HIGH	LOW	LOW
	Energy Savings up to 64%	Energy/Fuel Savings up to 84%	High level of grant required	High level of grant required

Kosovo - Technical and Financial analysis

ecoltdgroup.com

Kosovo - Needs and potential at the entire sector level

Parameter	Unit	Value
Current energy consumption-heating	GWh/y	6,551
Current energy consumption-cooling	GWh/y	879
Energy savings potential	GWh/y	4,349
Standard interventions		
Investment costs needed	Million €	2,790
Cost savings	Million €/y	363
CO2 emission reduction potential from the sector	MtCO2/y	4
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	38
Deep renovation		
Investment costs needed	Million €	4,410
Cost savings	Million €/y	362
CO2 emission reduction potential from the sector	MtCO2/y	5
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	38

Country-level analysis - guide

- Those building investments marked as High do not require a grant to have a positive Net Present Value (NPV) over a 20-year lifetime of the investments
- Those building investments marked as Moderate would require a grant between 0 and 50% to achieve a positive NPV.
- Those building investments marked as Low would require a grant of over 50% to achieve a positive NPV.

Kosovo – affordability analysis – Single family houses

Single family houses	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Kosovo				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 60%	Energy/Fuel Savings up to 77%	No grant required	Grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 60%	Energy/Fuel Savings up to 75%	No grant required	No grant required
LPG	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 61%	Energy/Fuel Savings up to 78%	No grant required	Grant required

Kosovo – affordability analysis – MABs up to 5 floors

MABs up to 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Kosovo				
Electricity	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 81%	No grant required	No grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 78%	No grant required	No grant required
LPG	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 66%	Energy/Fuel Savings up to 82%	No grant required	No grant required

Kosovo – affordability analysis – MABs more than 5 floors

MABs more than 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Kosovo				
Electricity	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 62%	Energy/Fuel Savings up to 80%	No grant required	No grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 90%	No grant required	No grant required
LPG	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 67%	Energy/Fuel Savings up to 86%	No grant required	No grant required

E CO.
DEEPER THINKING

North Macedonia - Technical and Financial analysis

ecoltdgroup.com

N. Macedonia - Needs and potential at the entire sector level

Parameter	Unit	Value
Current energy consumption-heating	GWh/y	10,936
Current energy consumption-cooling	GWh/y	1,590
Energy savings potential	GWh/y	7,902
Standard interventions		
Investment costs needed	Million €	4,781
Cost savings	Million €/y	496
CO2 emission reduction potential from the sector	MtCO2/y	7
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	31
Deep renovation		
Investment costs needed	Million €	6,851
Cost savings	Million €/y	539
CO2 emission reduction potential from the sector	MtCO2/y	7
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	31

Country-level analysis - guide

- Those building investments marked as High do not require a grant to have a positive Net Present Value (NPV) over a 20-year lifetime of the investments
- Those building investments marked as Moderate would require a grant between 0 and 50% to achieve a positive NPV.
- Those building investments marked as Low would require a grant of over 50% to achieve a positive NPV.

N. Macedonia – affordability analysis – Single family houses

Single family houses	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
North Macedonia				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 66%	Energy/Fuel Savings up to 71%	No grant required	Grant required
Firewood	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 66%	Energy/Fuel Savings up to 70%	Grant required	Grant required
DH	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 66%	Energy/Fuel Savings up to 73%	Grant required	Grant required

N. Macedonia – affordability analysis – MABs up to 5 floors

MABs up to 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
North Macedonia				
Electricity	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 85%	No grant required	No grant required
Firewood	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 64%	Energy/Fuel Savings up to 82%	Grant required	Grant required
DH	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 67%	Energy/Fuel Savings up to 85%	No grant required	Grant required

N. Macedonia – affordability analysis – MABs more than 5 floors

MABs more than 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
North Macedonia				
Electricity	HIGH Energy Savings up to 69%	HIGH Energy/Fuel Savings up to 82%	HIGH No grant required	HIGH No grant required
DH	HIGH Energy Savings up to 69%	HIGH Energy/Fuel Savings up to 86%	HIGH No grant required	MODERATE Grant required

E CO.
DEEPER THINKING

Montenegro - Technical and Financial analysis

ecoltdgroup.com

Montenegro - Needs and potential at the entire sector level

Parameter	Unit	Value
Current energy consumption-heating	GWh/y	2,482
Current energy consumption-cooling	GWh/y	538
Energy savings potential	GWh/y	1,889
Standard interventions		
Investment costs needed	Million €	1,925
Cost savings	Million €/y	161
CO2 emission reduction potential from the sector	MtCO2/y	2
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	4
Deep renovation		
Investment costs needed	Million €	2,529
Cost savings	Million €/y	167
CO2 emission reduction potential from the sector	MtCO2/y	2
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	4

Country-level analysis - guide

- Those building investments marked as High do not require a grant to have a positive Net Present Value (NPV) over a 20-year lifetime of the investments
- Those building investments marked as Moderate would require a grant between 0 and 50% to achieve a positive NPV.
- Those building investments marked as Low would require a grant of over 50% to achieve a positive NPV.

Montenegro – affordability analysis – Single family houses

Single family houses	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Montenegro				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 64%	Energy/Fuel Savings up to 74%	No grant required	Grant required
Firewood	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 64%	Energy/Fuel Savings up to 73%	Grant required	Grant required
LPG	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 67%	Energy/Fuel Savings up to 76%	No grant required	Grant required

Montenegro – affordability analysis – MABs up to 5 floors

MABs up to 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Montenegro				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 60%	Energy/Fuel Savings up to 78%	No grant required	Grant required
Firewood	HIGH	HIGH	MODERATE	LOW
	Energy Savings up to 60%	Energy/Fuel Savings up to 75%	Grant required	High level of grant required
LPG	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 62%	Energy/Fuel Savings up to 79%	No grant required	Grant required

Montenegro – affordability analysis – MABs more than 5 floors

MABs more than 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Montenegro				
Electricity	HIGH Energy Savings up to 60%	HIGH Energy/Fuel Savings up to 78%	HIGH No grant required	MODERATE Grant required
Firewood	HIGH Energy Savings up to 60%	HIGH Energy/Fuel Savings up to 85%	MODERATE Grant required	LOW High level of grant required
LPG	HIGH Energy Savings up to 61%	HIGH Energy/Fuel Savings up to 85%	MODERATE Grant required	MODERATE Grant required

Serbia - Technical and Financial analysis

ecoltdgroup.com

Serbia - Needs and potential at the entire sector level

Parameter	Unit	Value
Current energy consumption-heating	GWh/y	52,139
Current energy consumption-cooling	GWh/y	7,150
Energy savings potential	GWh/y	37,454
Standard interventions		
Investment costs needed	Million €	25,191
Cost savings	Million €/y	4,186
CO2 emission reduction potential from the sector	MtCO2/y	28
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	183
Deep renovation		
Investment costs needed	Million €	34,356
Cost savings	Million €/y	4,294
CO2 emission reduction potential from the sector	MtCO2/y	31
Health cost savings associated with PM 2.5/10 emissions - per unit - market level	Million €/y	183

Country-level analysis-guide

- Those building investments marked as High do not require a grant to have a positive Net Present Value (NPV) over a 20-year lifetime of the investments
- Those building investments marked as Moderate would require a grant between 0 and 50% to achieve a positive NPV.
- Those building investments marked as Low would require a grant of over 50% to achieve a positive NPV.

Serbia – affordability analysis – Single family houses

Single family houses	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Serbia				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 64%	Energy/Fuel Savings up to 71%	No grant required	Grant required
DH	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 68%	Energy/Fuel Savings up to 73%	Grant required	Grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 69%	No grant required	No grant required
Natural Gas	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 72%	Energy/Fuel Savings up to 77%	Grant required	Grant required
Coal	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 70%	No grant required	No grant required

Serbia – affordability analysis – MABs up to 5 floors

MABs up to 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Serbia				
Electricity	HIGH	HIGH	HIGH	MODERATE
	Energy Savings up to 68%	Energy/Fuel Savings up to 81%	No grant required	Grant required
Natural Gas	HIGH	HIGH	MODERATE	LOW
	Energy Savings up to 73%	Energy/Fuel Savings up to 82%	Grant required	High level of grant required
Firewood	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 62%	Energy/Fuel Savings up to 78%	No grant required	No grant required
DH	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 68%	Energy/Fuel Savings up to 81%	Grant required	Grant required

Serbia – affordability analysis – MABs more than 5 floors

MABs more than 5 floors	Technical potential		Financial/economic potential	
	Standard interventions	Deep renovation	Standard interventions	Deep renovation
Serbia				
Electricity	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 64%	Energy/Fuel Savings up to 82%	No grant required	No grant required
Natural Gas	HIGH	HIGH	MODERATE	MODERATE
	Energy Savings up to 67%	Energy/Fuel Savings up to 85%	Grant required	Grant required
DH	HIGH	HIGH	HIGH	HIGH
	Energy Savings up to 69%	Energy/Fuel Savings up to 88%	No grant required	No grant required

Residential Energy Efficiency Market Assessment – World Bank

Annex II: Country-level gap analysis

18/11/2021

P81

Overview

1. Key elements of Gap Analysis
2. Readiness for EE residential investments across WB6 countries
3. Gaps for EE residential investments specific for each of the WB6 countries
4. Gaps for EE residential investments identified across all the WB6 countries
5. Next steps

Gap Analysis – key elements examined

1. The legislation governing EE in the residential building sector

2. Main defining policies and supporting measures which frame the various governments' plans for implementing energy efficiency in the residential sector

3. Policies related to the governance and management of housing Institutional assessment

4. Financing assessment

5. Market characteristic assessment

Relevant EU Directives and policies

Directive 2012/27/EC on Energy Efficiency (EED)

- Consumer information about EE,
- Energy services markets,
- Building renovation strategy and buildings database
- NEEAP and EE targets
- Energy efficiency obligation schemes (EEO)
- EE financing mechanisms

Directive 2010/31/EC on the Energy Performance of Buildings (EPBD)

- Methodology for calculating the energy performance of buildings
- Minimum energy performance requirements for buildings based on calculation of cost-optimality
- System of certification of energy performance
- Defining the energy performance for nearly Zero Energy Buildings (nZEB) and setting targets for their implementation

Directive 2009/125/EC on Ecodesign & Regulation (EU) 2017/1369 on Energy Labelling

- Labels for energy consuming products
- Minimum requirements for energy efficiency for these products

Readiness for EE residential investments – key conclusions

- In all countries, significant progress in approximating the Energy Performance in Buildings Directive
- Montenegro and BiH have EE Fund for facilitating investments into the residential sector
- In development in Kosovo, Serbia, and N. Macedonia (not in development in Albania)
- In many of the countries (N. Macedonia, Montenegro, Serbia, and BiH in particular) successful pilot-level support schemes have been implemented / are being implemented to support EE in the residential sector through the public sector support.
- In Serbia, N. Macedonia, Montenegro, and BiH there is a good legal situation related to the bankability of multi-apartment buildings (MABs) and existence of building-level associations of owners (for the purposes of this report, this is described as Homeowners Associations (HOAs))
- BUT financing to these buildings / HOAs as legal entities is not developed. In Kosovo and Albania the underpinning legal situation for forming HOAs still needs to be more fully developed.

Readiness for EE residential investments – key conclusions

- In all countries there are dedicated EE products on the market for the residential sector – though in single-family households and in many cases costs of borrowing are considered high for end-users - EBRD Green Economy Financing Facility (GEFF) and Green for Growth credit lines

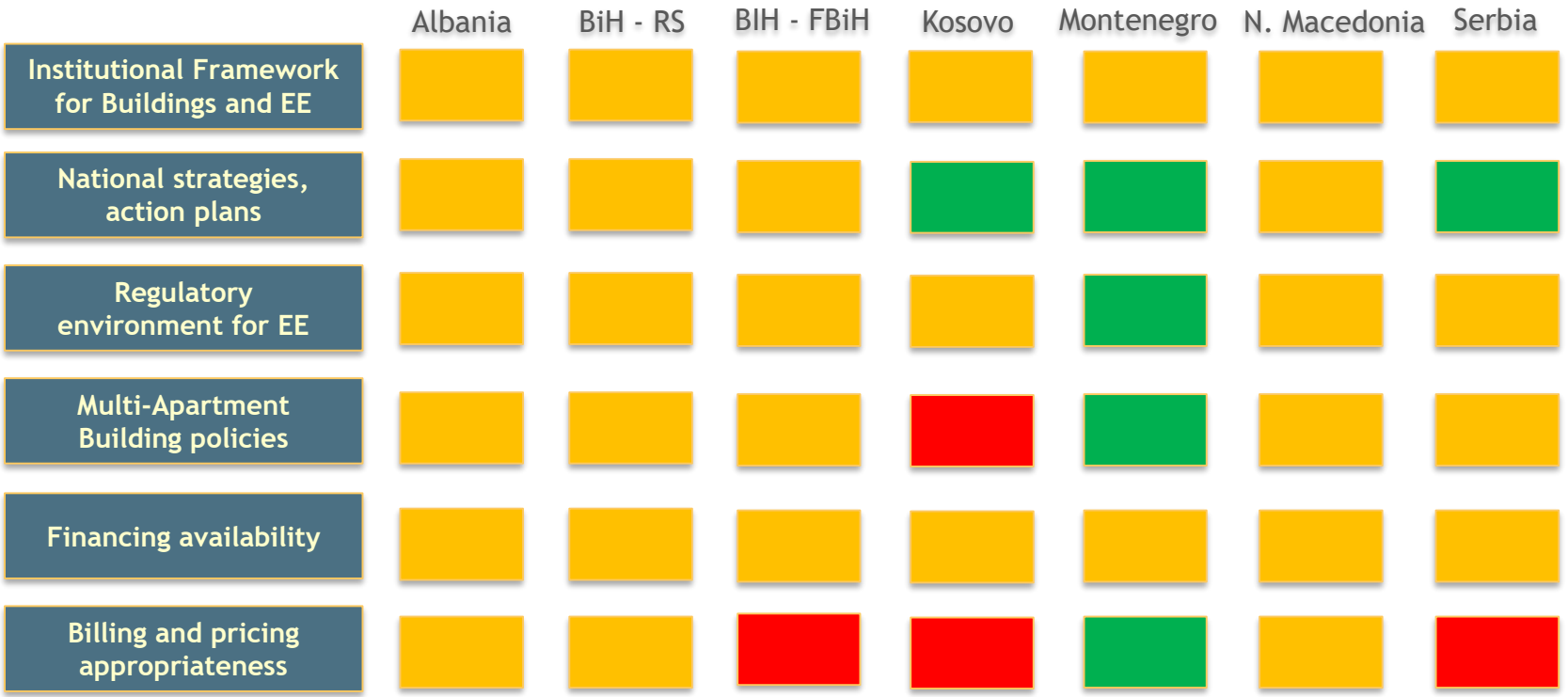
- Energy prices are low in general across the region. In some cases where District Heating is an important source of energy (particularly Kosovo, BiH and Serbia), lack of consumption-based billing is a serious barrier to investment.

- Energy Performance Contracting (EnPC) – is currently being implemented in Serbia by a District Heating company with MABs and could potentially be replicable in other district heating areas.

Readiness for EE residential investments – key conclusions

- Professional capacity (engineers, construction companies, etc.) and availability of technology
  - Not considered a major issue in most of the countries according to stakeholders.
  - In Albania a particular focus on architectural practices that take into account EE would be useful
  - In BiH equipment suppliers improving capacity for "selling" the EE aspects of technology would be beneficial
  - Prices rise with support programs – as does capacity
- For most countries, lack of capacity (financial and technical) amongst housing management companies creates a barrier to investment in MABs
- Awareness amongst the public could be increased – especially coupled with specific programs to be undertaken
- Illegal dwellings are an important issue in many countries and there may be a scope for EE investments in conjunction with the legalization process

Readiness for EE residential investments – summary



WB6 – recommendations valid for all the countries - Policy and instiutional gaps

- Adopt Building Renovation Strategy and plan for nZEBs:
  - inventory of buildings (including creating a unique building code list) – linked with certification
  - identifying the worst-performing buildings and prioritizing them for renovation
- Either adopt an EEO scheme (preferred) or alternative policy measures – likely including the residential sector
- Strengthen the capacity of institutions to roll out:
  - Increased training and auditor certification and control over building certification and adherence to MEPS
  - Increase capacity of municipalities to plan concrete investments
- Effective MRV systems to track EE investments and impacts
- Fully implement building energy performance certification requirements – including adopting a calculation tool
- Adoption, implementation, and enforcement of key energy labelling and ecodesign regulations – in particular related to room air conditioners, space heaters, water heaters, and lamps (Montenegro the only country having done this)
- Support municipalities in supervision of EPBD (MEPS, energy certification requirements)
- Legally define energy poverty and conduct detailed analysis of its prevalence to allow for specific programs

WB6 – recommendations valid for all the countries - Financial and economic gaps

- Streamline application procedures for support mechanisms – sharing best / most effective practices across sub-national levels and with commercial banks
- Support for the preparation of technical and financial documentation for renovation projects in MABs
- Support for commercial lending through a guarantee mechanism – especially for HOAs or other loan off-takers (could be HMCs, DH companies, etc. acting in an ESCO role)
- Support HMCs in developing their role of arranging lending for MABs – potentially including financial support
- Provide support mechanisms for poorer (energy-poor) households for implementing EE in general and in MABs and solid-fuel based heaters in particular
- Incorporate tax revenues into modelling of impacts of EE support programmes – which will likely demonstrate that subsidy programmes are budget neutral due to de-greying of the renovation market and increased spending in more productive parts of the economy which are not energy consumption

P90

WB6 – recommendations valid for all the countries - Market related gaps

- Build on EBRD GEFF existing support to develop list of pre-approved lists of installers and suppliers of EE equipment / measures and conduct training as applicable – including on how to assist end-users in applying for finance
- Publish and publicize information for citizens on support mechanisms, application procedures, pre-approved technology suppliers and installers, etc.
- Consider support (either through a local facility or otherwise) for testing EE equipment from local producers
- Devising programmes to support legalisation of buildings in conjunction to EE measure investments

Albania – specific recommendations

- Establishment of an independent Energy Efficiency Fund to support project implementation / investment mobilisation
- Related to MAB governance, it is necessary to harmonize the Law on Condominiums with various related Laws which might affect its implementation
- Implement legal requirements for building organisations (HOAs) be formed and for residents to pay into a bank account in order to develop a banking history

BiH – specific recommendations

- Adoption of the up to date NEEAP
- Implementation of a comprehensive energy management and information system
- Amendments to the cantonal laws on HOAs in MABs are needed to change the decision-making provisions for building renovation in order to enable the adoption of decisions by at least a majority of the total number of homeowners
- Consideration of internalization of external costs from coal-based electricity production and coal / non-sustainable biomass usage in households. This could include a carbon tax which could be then used for supporting job-creating schemes for energy efficiency and sustainable biomass development

Kosovo – specific recommendations

- The Kosovo Energy Efficiency Fund should be capitalized and support further implementation of EE measures in residential sector
- Address barriers to investment / building management in the Law of the Condominium, such as harmonization of the Law on the Condominium with various related laws that might affect its implementation
- Improve enforcement of recently adopted EE standards

Montenegro – specific recommendations

- Increase state financing for EE measures via the Eco Fund, in cooperation with the Ministry of Capital Investments and local administrations
- Expand capacity of the Eco Fund including implementing mechanisms for support for EE in the residential sector – this will be especially important for leveraging donor funds
- Fully develop / adopt calculation tool for energy certification of buildings and roll out its requirements – linked with developing a buildings database
- Support for the preparation of technical and financial documentation for renovation projects in MABs

N. Macedonia – specific recommendations

- Establish an ongoing support mechanism to operate at greater scale for the residential sector (potentially via the new EE Fund) – this could include the use of carbon taxes (being considered in N. Macedonia) as a source of funding
- Strengthen the capacities of the Min of Economy, Energy Agency, and / or EE Fund to hiring additional experienced and skilled staff and/or outsourcing support for investment support
- Support homeowners with possible establishment of municipal centres to support development and operation of HOAs / HMCs and their investments (for EE and non-EE)
- Consideration of internalization of external costs from coal-based electricity production and coal / non-sustainable biomass usage in households

Serbia – specific recommendations

- Establish an ongoing support mechanism (EE Fund) for EE in the residential sector utilizing at a minimum the EE fees
- Establish clear guidelines for local self-government units for implementing EE support schemes combined with training
- Consideration of internalization of external costs from coal-based electricity production
- Transition to consumption-based billing in all district heating areas

Residential Energy Efficiency Market Assessment – World Bank

Annex III: Detailed analysis of financing mechanisms and options

18/11/2021

Option 1: Public grant programmes

P99

Option 1: Public grant programmes

Type and source of financing

- Non-reimbursable subsidy towards purchase cost of energy efficiency measure
- Financed through government / municipal budget – in some instances this draws on a levy on energy bills with the receipts either explicitly or implicitly hypothecated

Market barriers addressed

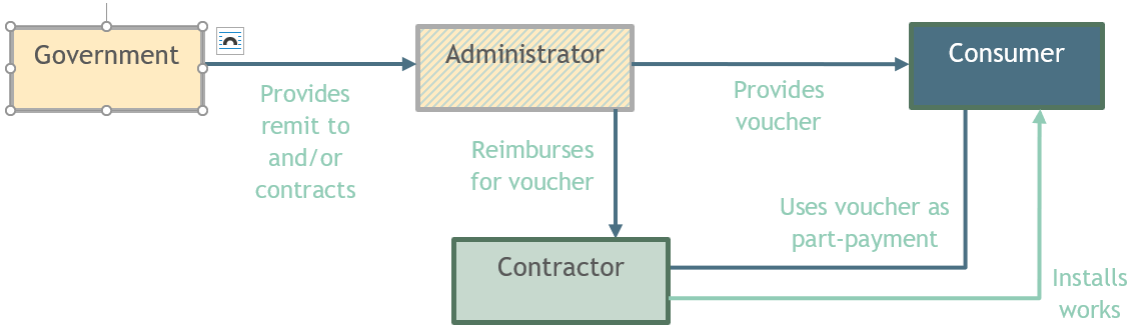
- Access to capital; grants have been noted to include an “emotional premium” which outweighs their monetary value .
- Help overcome risk adversity among consumers regarding new technologies and accelerate nascent markets.
- Helps address issues of grey market prevalence – pressuring suppliers into formal market

P100

Option 1: Public grant programmes (2)

Implementing entities:

- Front-end administration typically undertaken directly by responsible ministry or public agency
- A specialist contractor may support administration activities such as registrations, managing applications, auditing transactions, dealing with complaints, and undertaking research
- Can be made via the consumer (through a voucher or similar as shown below), directly to a financial institution (to pay down principle or interest rates), or direct to the contractor.



P101

Option 1: Public grant programmes (3)

Applicability:

- Multi-Apartment Buildings – via Housing Management Company, HOA, bank, or other
- Individual dwelling – via owners, banks, suppliers

Option 2: Private sector mandates (including Energy Efficiency Obligation schemes)

P103

Option 2: Private sector mandates (including Energy Efficiency Obligation schemes)

Type and source of financing

- Placing an obligation of private entities (typically utilities) to support uptake of energy efficiency measures and deliver energy savings among end consumers.
- Support will usually be in the form of grants but can also include technical assistance, loans, and financial assistance to ESCOs

Market barriers addressed

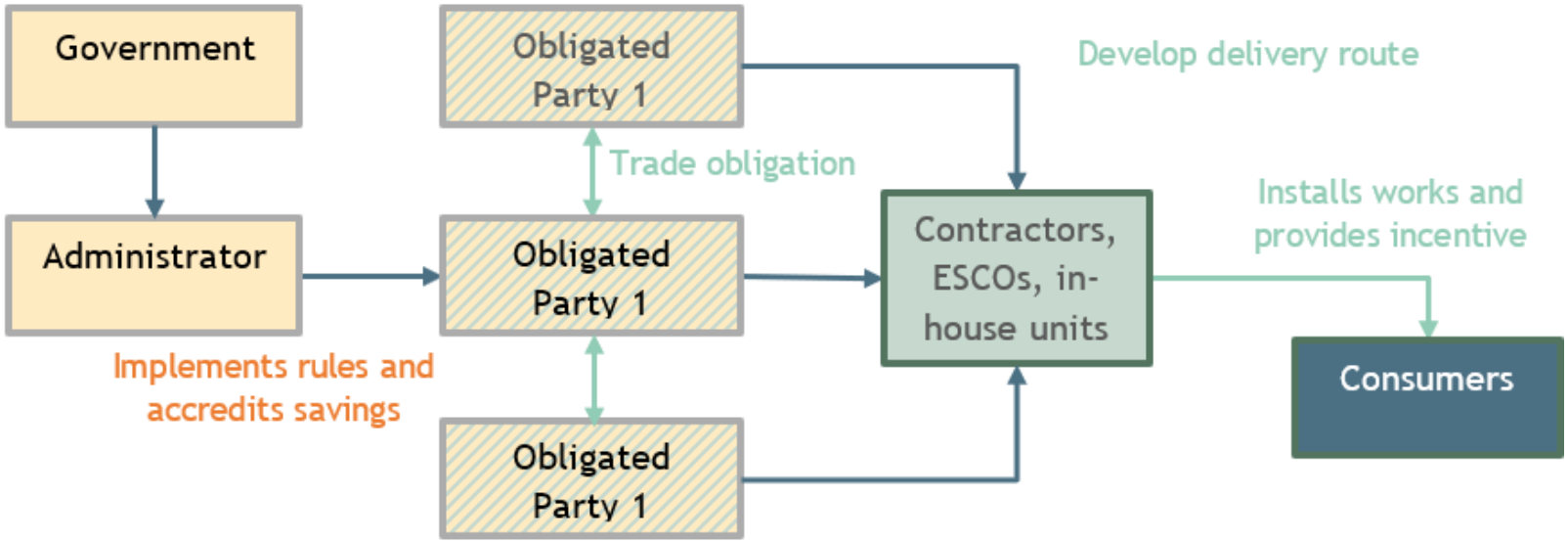
- Similar barriers to those identified for direct grants in Option 1.
- Utilities have a direct link with end consumers and are well positioned to provide comprehensive information on energy consumption implications.

Option 2: Private sector mandates (including Energy Efficiency Obligation schemes) (2)

Implementing entities:

- The responsible government entity defines the scheme rules in legislation and set targets
- Ideally an arms-length agency (can be the regulator) sets up detailed processes and administers scheme
- Utilities (may be retailer or distributors) then incentivise delivery - in-house providers or via third-party contractors (including ESCOs)
- Obligated utilities may be networked fuel sectors (electricity, gas, district heating) or include distributed energy (oil products, biomass etc)
- Grants from the obligated party can be made via the consumer (through a voucher or similar) or direct to the contractor
- In a regulated environment the energy market regulator will have to approve scheme costs

Option 2: Private sector mandates (including Energy Efficiency Obligation schemes) (3)



Option 2: Private sector mandates (including Energy Efficiency Obligation schemes) (4)

Applicability:

- Individual dwellings - Significant success in the residential sector with specific provisions for incentivising activity in low-income homes
- MABs are likely to require working through ESCOs and Housing Management Companies who deal directly with HOAs.

Option 3: EE Fund to provide direct loans

P108

Option 3: EE Fund to provide direct loans

Type and source of financing

- Provision of loans to consumers usually on preferential terms to commercial market offering
- Seed financing may come from government budget, donors/IFIs, energy bill levies, and in some cases private entities

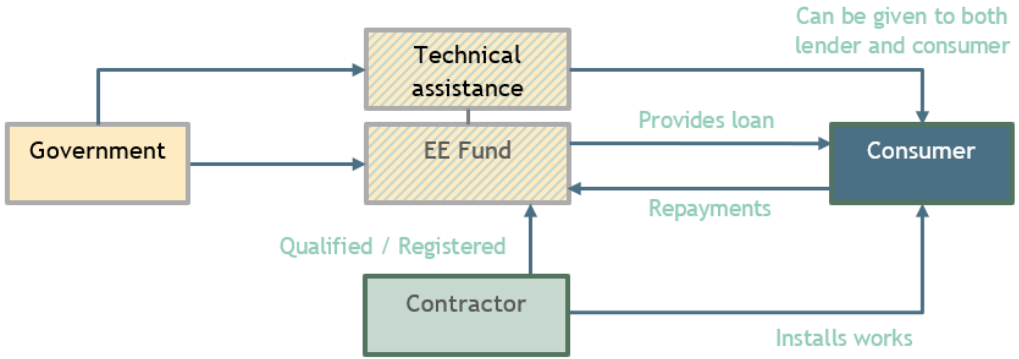
Market barriers addressed

- Access to capital - may enhance access to investment capital
- Commercial finance markets may lack capability and resources to assess risk for energy efficiency measures and/or lack interest due to perceptions of high transaction cost (need for aggregation)

Option 3: EE Fund to provide direct loans (2)

Implementing entities:

- May be established in legislation as an arms-length public agency with regulated procedures for nominating and selecting executive staff as well as an oversight board (of ministers)
- Alternatively, a private fund manager may be selected via a tender with public sector oversight
- Technical assistance (possibly subsidised) may be offered by a separate entity; such support has been shown to be instrumental in successful loan scheme roll-out



Option 3: EE Fund to provide direct loans (3)

Applicability:

- Multi-Apartment Buildings – via Housing Management Company, HOA, or other
- Individual dwelling – via owners, suppliers (typically target more costly, complex and general renovation measures)

Option 4: Commercial financing (loans and credit enhancement tools)

P112

Option 4: Commercial financing (loans and credit enhancement tools)

Type and source of financing

- Credit lines extended to commercial banks for on-lending for energy efficiency
- May be supported by credit enhancement tools including guarantees and hierarchical debt (and sometimes interest rate subsidies)
- Financed as per direct loans but with leverage from capital by commercial banks (minimum co-financing levels may be stipulated)

Market barriers addressed

- Similar to direct loans (Option 3) in addition to building capacity within domestic financing institutions in order to develop a sustainable sector

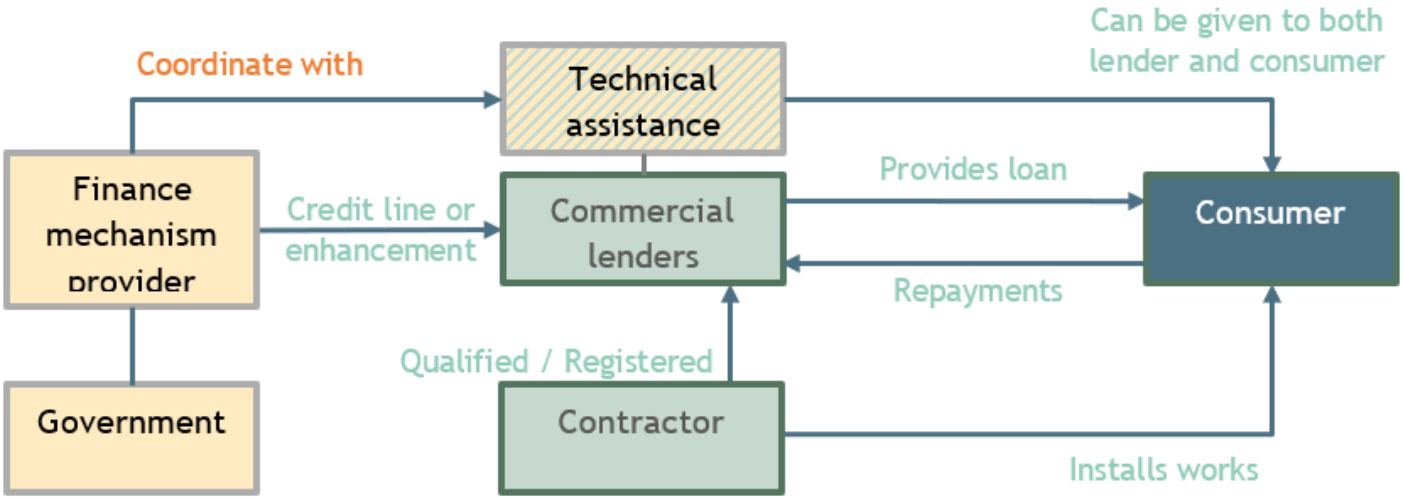
P113

Option 4: Commercial financing (loans and credit enhancement tools) (2)

Implementing entities:

- The credit line originator (e.g. IFI) will not deal directly with end consumers but rather via the participating commercial bank. They may, however, assist in the coordination of parallel technical assistance
- As for other mechanisms, qualification criteria or approved registers may be used to identify eligible contractors and/or products
- Governments / public sector can support via grants to banks / interest rate subsidies / support of technical assistance / guarantee mechanisms (first loss)

Option 4: Commercial financing (loans and credit enhancement tools) (3)



Option 4: Commercial financing (loans and credit enhancement tools) (4)

Applicability:

- Multi-Apartment Buildings – lending from Financial Institution (FI) via Housing Management Company, HOA, or other
- Individual dwelling – lending from FI (or sometimes suppliers) to owners
- Already being implemented in all WB6 countries via EBRD (GEFF) – but could be enhanced with, for example, 1st loss guarantee mechanism for specific types of clients (poorer households, Multi-Apartment Buildings)

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

Type and source of financing

- ESCOs undertake and aggregate energy efficiency interventions across multiple consumers based by an Energy Performance Contract (EPC) that transfer technical and financial risk
- Financing may be made through the ESCO which can be supported by financial institutions, including an EE Fund, or undertaken in parallel directly to the consumer
- A "Super ESCO" or an aggregator is established by government - acts as an ESCO itself (primarily targeting the public sector) and facilitates the development of private ESCOs through commercial and technical support
- Capitalisation of a Super ESCO / aggregator comes from government budget/donor funds but may also leverage commercial finance.

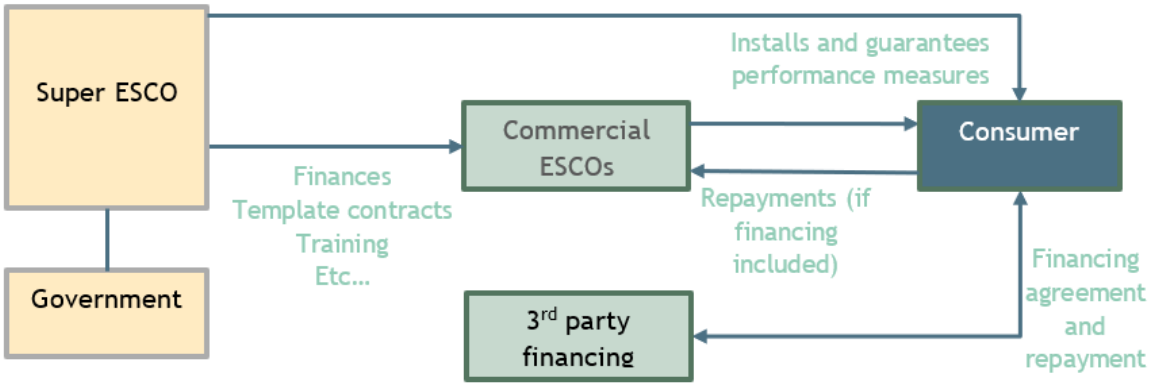
Market barriers addressed

- Deals with information asymmetry in which a consumer is not skilled to assess performance risk of an investment as well as access to capital issues
- Enhances technical competence and ability to aggregate lower transaction cost and open up possibility of project financing energy efficiency measures
- Super ESCOs / aggregators can help build an ESCO market by mitigating for commercial banks being unwilling to lead on project finance terms without collateral limiting equity available

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators(2)

Implementing entities:

- Super ESCO / aggregator is a government established entity in a similar regard to an EE Fund but with a more technical as well as financial remit - could be affiliated to a state-owned energy firm
- Private ESCOs may initially be an array of contractors, engineering firms, energy suppliers, equipment suppliers whose transition to full-service ESCOs is undertaken gradually or partially



Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators (3)

Applicability:

- In theory well suited to undertake deep renovations at scale where they may bring a full technical and financial package although lighting and energy management system activity in commercial and industrial customers remains the core market.
- Smart meter roll-out and improved in-home monitoring systems may help accelerate residential sector activity.
- ESCOs / private sector also commonly will engage with renewable energy production systems (e.g. roof-top solar) – could be for MABs or individual houses
- Potentially relevant to all WB6 countries for renewable energy
- For MABs, EE could be carried out by an aggregator – publicly owned institution covering technical and financial aspects, partnering with housing management companies, Home Owners Associations, private sector financial institutions, etc. Not likely using energy performance contracting, but re-payments over time

Option 6: Enhancing green mortgages

Option 6: Enhancing green mortgages

Type and source of financing

- Mortgage provider offers improved terms for an energy efficient home or renovation
- Mortgage providers may be supported through credit enhancement tools, capital provision, facilitating regulations, and common standards

Market barriers addressed

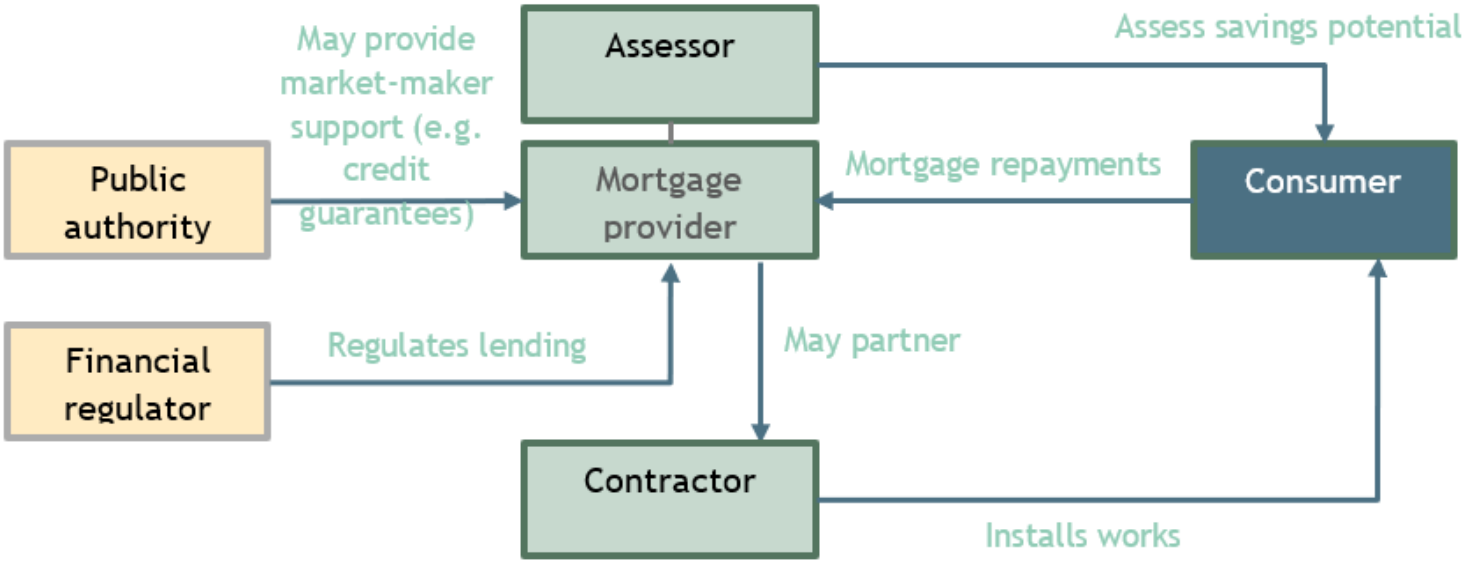
- Offering through mortgage provider may improve information for consumer, increase trust
- Access to capital by securing against property
- Reflects both value added from renovation to property as well as increased disposable income from lower energy bills
- Lack of demand results in sparse product offerings creating a feedback loop with lower demand. Public support through provision of credit enhancement schemes (see Option 4), performance standards or other incentive mechanisms may also help create demand.

Option 6: Enhancing green mortgages (2)

Implementing entities:

- Commercial lenders design and offer green mortgage products.
- May partner with energy service companies and/or utilities to sell renovation products.
- Public authority may provide supporting incentives.
- Financial regulator must consider capital requirement implications and compliance with other lending regulations

Option 6: Enhancing green mortgages (3)



Option 6: Enhancing green mortgages (4)

Applicability:

- Single-family houses are most appropriate – or financing of MAB construction - Focused on owners and particularly owner-occupiers (does not address split incentive between tenant and landlord for rental properties)
- Not particularly suited to low-income households given focus on owner-occupiers

Option 7: On-bill financing

Option 7: On-bill financing

Type and source of financing

- Consumer pays for energy efficiency measure through energy bills
- This can be treated as a loan or as a service whereby it is considered part of services offered by the utility and integrated into tariffs
- Funds may come from utility (which may be offered access to low-cost public funds) or third-party financing bodies
- Loan may be attached to meter/property rather than individual

Option 7: On-bill financing (2)

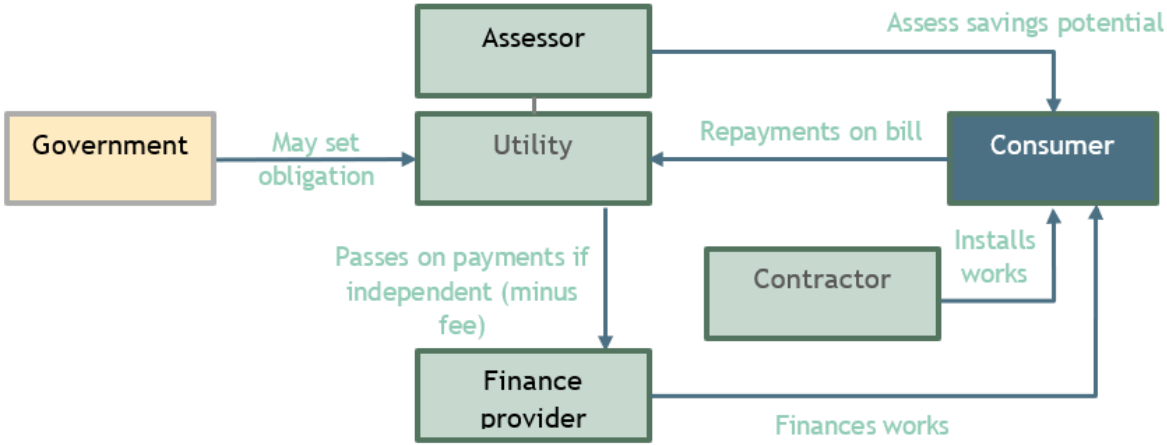
Market barriers addressed

- Improves access to capital in similar manner to loan but may be more accessible for low-income households if credit checks (a) are not required due to treatment as a service, or (b) are lowered due to perception of lower default risk on energy bills
- Tackles split incentive between owner and renter when loan/service is attached to the property
- Link to property helps deal with long repayment periods
- Low transaction cost due to routine payment of energy bills
- Directly links savings achieved to repayments to increase consumer engagement

Option 7: On-bill financing (3)

Implementing entities:

- The participating utility may also act as assessor and financier
- Or third-party finance may be arranged while assessors can be stipulated to be independent
- Public entities may support financing and marketing



Option 7: On-bill financing (4)

Applicability:

- In theory better suited to both rental sector and low-income than standard loan.
- Can work well in the case of district heating companies
- Building-level metering will be necessary for MABs as will rules on allocation of costs for measures of common benefit
- Consumption-based billing is necessary to have financial payback for end-users
- A form of on-bill financing where the utility is acting as an ESCO is currently underway in Šabac, Serbia
- Energy Efficiency Obligation scheme (EEO – Option 2) would make this option interesting for distribution companies – as a way of offering EE as a payable service instead of investments as grants

Option 8: Property Assessed Clean Energy (PACE) loans

P131

Option 8: Property Assessed Clean Energy (PACE) loans

Type and source of financing

- Lending to houses over long-term repaid through property tax or linked to land value / real-estate value
- Funding source may be municipal bonds (or other direct debt) although private lending mechanisms also used

Market barriers addressed

- Link to property helps deal with long repayment periods and thus cross-tenure (transfers upon property sale)
- Can assist with split incentives issue between renters and landlords
- Improves access to capital by being asset-backed by the property
- Financial support usually for up to 100% of investment costs for a retrofit
- Long term loans of 15 to 25 years allow for recovery of long payback period measures

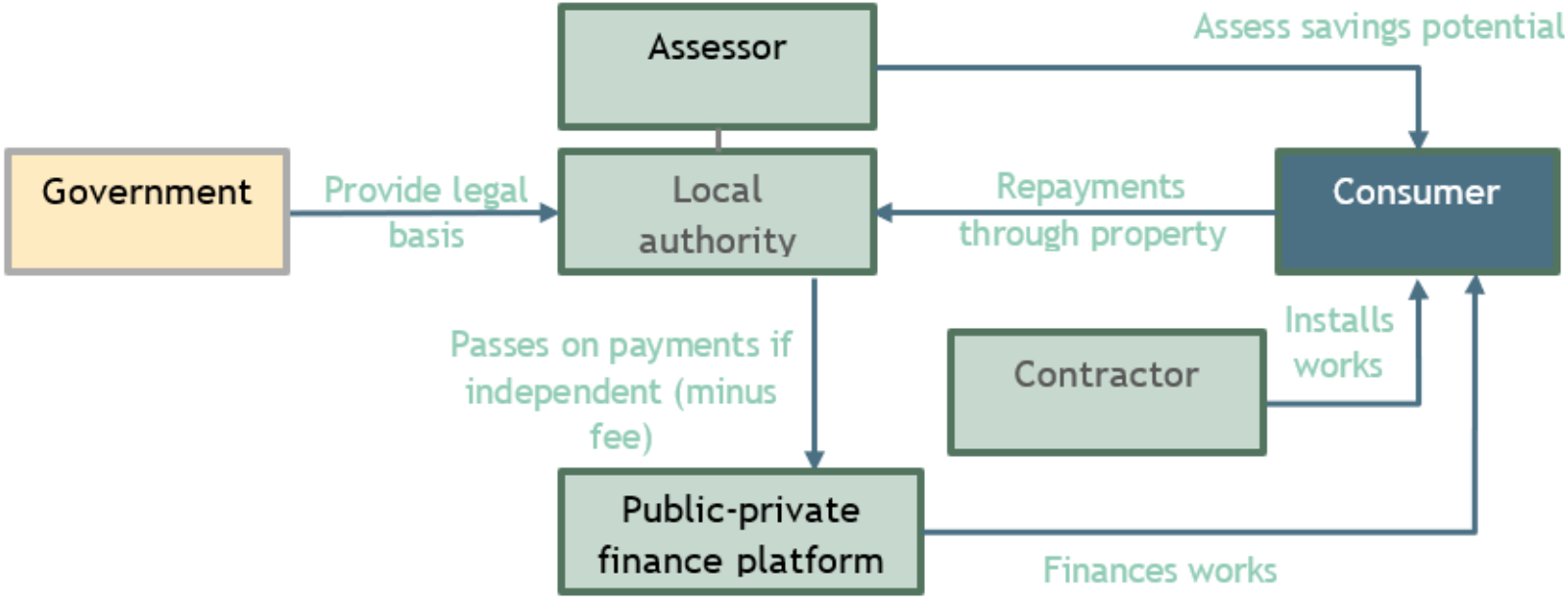
P132

Option 8: Property Assessed Clean Energy (PACE) loans (2)

Implementing entities:

- Government sets up legal framework.
- The local authority records the lien on the property and collects via taxation scheme (for transfer to investors if independent).
- Technical assistance may be offered from a designated entity coordinated through an agreement with the public authority.
- The local authority mobilises finance (including private) or contracts with an investment platform to provide finance.
- Utility companies and energy service companies can help promote scheme

Option 8: Property Assessed Clean Energy (PACE) loans (3)



Option 8: Property Assessed Clean Energy (PACE) loans (4)

Applicability:

- Suited to residential homeowners, both single and multi-family apartments and landlords as well as owner-occupiers
- Easier to access for low-income households than personal loan due to security and reduced emphasis on credit score of applicant

Description of potential financing options and their readiness for Albania

Option 1: Public grant programmes (including tax incentives)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Budgetary commitment by Government of Albania to provision of support • Legal mechanism to develop means of allocating funds in efficient, cost effective, and transparent manner and vesting necessary authority in implementing entities • Identification of most promising measures (led by draft Building Renovation Strategy) • Training to improve supply base of qualified contractors in market for likely focus measures – e.g. insulation • Consideration of how scheme may assist in reducing grey economy activity • Barriers in MAB legislation and implementation cited in Gap Analysis need addressing if this sector is to be served adequately as part of scheme. • Develop awareness among home owners (particularly apartment owners) on issues related to retrofitting.	• Grants may be provided through municipalities, existing ministries, or – if established - an independently established EE Fund • Grants typically support shallower measures for which project specific technical assistance may carry too high a transaction cost – rather an approved list managed by AEE of registered products/providers could be developed • For MABs, existing scheme in Tirana can serve as a useful model for scaling up to other cities
Multi-Apartment Buildings: Good				
Institutional readiness		Manageable within current context and planned expansion of capacity (Agency for EE - AEE)		
Legal and regulatory readiness		No significant legal / regulatory barriers exist.		
Market readiness		Companies for implementation exist – though some capacity could / should be built for developing calls for proposals / processing grants.		

Option 2: Private sector mandates including energy efficiency obligation schemes (EEO)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Development of secondary legislation required by primary Law on Energy Efficiency regarding establishment of an EEO or "Alternative Measures" • Design of an EEO scheme including identification of obligated parties, target end-use sectors and measures, M&V processes, scheme rules. • Generation of broad-based support for energy bill-based scheme in low tariff environment among government, obligated parties and consumer groups. • Consideration of how low-income groups will be addressed in the scheme. • Estimation of tariff impact and target size.	• MIE to act as policy setting entity • AEE likely to be administrative entity allocating targets, accrediting savings, enforcing non-compliance, and reporting. • Regulator to allow costs pass-through in regulated tariffs • Technical support for energy saving calculation methodologies • Obligated parties may be energy retail firms or distribution utilities and either limited to network entities (electricity, gas, district heat) or all fuel types.
Multi-Apartment Buildings: Fair				
Institutional readiness		Could be managed by the AEE but limited current capacity in place.		
Legal and regulatory readiness		Secondary legislation required and institutional buy-in.		
Market readiness		Implementing companies (distribution companies) would need capacity enhancement – including setting up support schemes, implementation, and Measurement, Reporting, and Verification (MRV).		

Option 3: EE Fund to provide direct loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• Similar requirement to Option 1 but to develop a revolving fund with potentially more complex financial products a dedicated, independent body set in legislation is likely a requirement. • Ability of HOAs to borrow as cited in Gap Analysis is of particular relevance should scheme seek to address MABs also.	• No currently existing institution could provide this option. If established, loans may be provided through an independently established EE Fund • Coordination with AEE for project identification, preparation and technical assistance • Coordination with municipalities in project identification
Multi-Apartment Buildings: Poor				
Institutional readiness		No institution exists which is well-placed to carry this out.		
Legal and regulatory readiness		Would require legal acts to allow for such lending.		
Market readiness		Construction companies, etc. could be involved, but otherwise, no market readiness from the lending side.		

Option 4: Commercial financing (loans and credit enhancement tools)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• To consider how this would complement and not duplicate existing such scheme support by GEFF/EBRD and GGF. • Complementary (expansion) area would be in MABs - ability of HOAs to make decisions and borrow is an issue as cited in Gap Analysis. • Commercial banking sector has reasonably lengthy experience for already bankable populations – so development of credit enhancement tools for lending to hard-to-reach subsectors would be most important (MABs, low income)	• MIE could facilitate credit enhancement with financial sector actors (public call for proposals). A grant mechanism acting as an interest rate subsidy and / or guarantee mechanism (first loss cover) could be established and operated by the MIE or have the grant provided to an IFI. • If established, mechanisms may be offered through an EE Fund • Coordination with commercial banks to systematically address how a scheme would be additional and equitable – in particular targeting poorer populations • Numerous banks already active in EBRD's Sustainable Energy Finance Facility (blending of capital sources + grants) so there is some capacity / understanding in the sector
Multi-Apartment Buildings: Good				
Institutional readiness		AEE or other body could partner to expand programmes.		
Legal and regulatory readiness		Already ongoing given the current regulatory system. For MABs, ability of HOAs to make decisions and borrow is an issue (but no legal changes necessary).		
Market readiness		Financial institutions already involved in this sort of activity.		

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Identification and specification of entity to be established as a "Super ESCO" • Legislative amendments and drafting to establish and invest in entity via government budget stipulating objectives, responsibilities and activities. • Implementation of revised Article 18 of the amended Law on Energy Efficiency including the development of a model contract, registry of providers, publication of relevant information, and monitoring of market. • Drafting of model contract.	• This mechanism could be used to focus on renewable energy (roof-top PV especially), where the financial parameters are generally good. • AEE to implement actions of amended Law on Energy Efficiency. • Consideration of OSHEE group member as Super ESCO based on Croatian HEP model.
Multi-Apartment Buildings: Fair				
Institutional readiness		AEE or others could partner with municipalities to develop programmes. But no institution for implementation (e.g. Super ESCO or aggregator) yet exists.		
Legal and regulatory readiness		Would likely require secondary legal act(s) to establish an aggregator and / or enhance ESCO involvement.		
Market readiness		ESCOs for PV installations could engage in this sort of activity. For MABs and EE, limited capacity of companies.		

Option 6: Enhancing green mortgages

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Full implementation of Energy Performance Certificates in residential buildings required and policy targets for raising average level across country • Assessment of mortgage market with commercial lenders and scoping of potential support mechanisms that may be provided • Mortgage provider(s) would then need to be chosen for engagement (likely public competition) • Institution for developing state support would need to be identified (possibly AEE but not necessarily suitable)	• MIE to implement Energy Performance Certificate (EPC) framework and set long-term policy objectives in relation to residential EPC levels. • If established, an EE Fund may provide guarantee mechanism or junior loan to commercial lenders of green mortgages (see also option 4). • Energy service firms to work with mortgage providers on bundled offers. • Development of such financial instrument should take into consideration perception of local banking community, including the banking regulator and any rules about pricing of mortgages.
Multi-Apartment Buildings: Fair				
Institutional readiness		Bank innovation would be necessary. AEE could partner to expand programmes.		
Legal and regulatory readiness		Potentially requires regulatory changes for banking sector.		
Market readiness		Local financial institutions already involved in green lending (using blending) but would need enhanced capacity.		

Option 7: On-bill financing

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Necessary legislative amendments will depend on consumer lending legislation and treating investment as a service, not a loan • Regulatory development may be required to set out items such as rules for implementation, covering authorisations for participation, code of practice, necessary assessments and confirmation prior to entry into a plan, terms of the plan, obligations of plan providers, and disclosure upon transactions • Requires development with energy market retail firms, finance providers and contractors • For MABs, decision-making limitations would need to be addressed	• With the exception of electricity distributor, no institution to undertake this effort. • MIE could develop necessary regulatory amendments and set out mechanism model. • Retail firms (electricity distributor - OSSH) would deliver on-bill options to consumer and coordinate with financing entity. • Building assessments may be delivered separately from independent providers or bundled with retail offer.
Multi-Apartment Buildings: Poor				
Institutional readiness		Would require capacity of AEE and MIE (i.e. staff to implement the mechanism) development of regulatory amendments		
Legal and regulatory readiness		Would require development of regulatory amendments		
Market readiness		Only one company would be well-placed to carry this out (Electricity Distribution Company of Albania (OSSH)) and it's unclear if this could be possible to put such loans on electricity bills – especially for MABs		

Option 8: Property Assessed Clean Energy (PACE) loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Property taxes in Albania exist and municipalities have some flexibility in changing them. • Likely to require changes in tax decisions for local municipalities and model contracts enable taxes to carry EE loans. • Familiarisation and development of capacity within municipalities for administering a scheme. • Identification of source of capital finance (third-party finance?)	• Municipalities would need to establish the legality of the mechanism / model contracts. MIE to develop necessary legislative amendments with Ministry of Finance and Economy if needed. • Identification of promising municipality (likely Tirana) for developing trial scheme. • AEE may provide technical support including development of one-stop-shops. • Third party capital financing for technical assistance, capital injections (likely to go via national government distributed to municipalities).
Multi-Apartment Buildings: Fair				
Institutional readiness		Municipalities already establish local taxes and some are engaged in EE		
Legal and regulatory readiness		Local property taxes could probably be adjusted for this measure, but would require significant work to develop the options.		
Market readiness		Would require additional capacity of building professionals to estimate financial aspects of investments / impacts.		

Description of potential financing options and their readiness for Bosnia and Herzegovina

Option 1: Public grant programmes (including tax incentives)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Budgetary commitment by Government of Federation BiH (potentially with Cantons) and / or Republika Srpska to provision of support • Identification of most promising measures (led by adopting Building Renovation Strategy and establishment the inventory of residential buildings at the entity and local levels) • Consideration of how scheme may assist in reducing grey economy activity • Barriers in MAB legislation and implementation cited in Gap Analysis need addressing if this sector is to be served adequately as part of scheme - particularly in Cantons	• Implementation of a grant program could be facilitated by existing Funds for Federation BiH and Republika Srpska separately. Targeting small scale investments (i.e. household appliances, heating devices, RAC) seem as a likely way to success. • Could be implemented through financial institutions (paying down principal) as with the EBRD's SEFF programme, or via a voucher programme for specific appliances / energy consuming products. • In FBiH, cantons could serve as key implementing agents (currently being carried out in Sarajevo Canton)
Multi-Apartment Buildings: Good				
Institutional readiness		Manageable within current context and planned expansion of capacity (Funds for Environmental Protection)		
Legal and regulatory readiness		No significant legal / regulatory barriers exist.		
Market readiness		Companies for implementation exist - though some capacity could / should be built in terms of preparation of project documentation and implementing works.		

P146

Option 2: Private sector mandates including energy efficiency obligation schemes (EEO)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Development of secondary legislation requiring an EEO scheme • Design of an EEO scheme including identification of obligated parties, target end-use sectors and measures, M&V processes, scheme rules • Generation of broad-based support for energy bill-based scheme in low tariff environment among government, obligated parties, and consumer groups • Consideration of how low-income groups will be addressed in the scheme. • Estimation of tariff impact and target size. • Adoption / implementation of proper MRV regulations are critical	• In order to implement private sector mandates, such a scheme should be developed and accepted within RS and/or FBiH – by the relevant entity-level Ministries. • Electricity distribution companies are likely to be the key obligated parties, with the option of paying into existing environmental protection funds – which in turn could have programmes such as grant schemes (Option 1) or support for commercial financing (Option 4).
Multi-Apartment Buildings: Fair				
Institutional readiness		Institutional buy-in required and can be challenging, though preliminary discussions indications show interest in the mechanism		
Legal and regulatory readiness		Secondary legislation required		
Market readiness		Implementing companies (distribution companies) would need capacity enhancement.		

Option 3: EE Fund to provide direct loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• Relevant existing Funds do not have a track record of successful lending to end-users (unclear if legally can do so directly to physical persons) • Building capacities and procedures for loan evaluation and management - although the Funds would not be likely allowed to increase staff significantly.	• Would be operationalized through the Funds for Environmental Protection in FBiH and RS - but would require setting up rules and processes, as well as capacity building, or to be established as an independent legal entity at the entity levels. • Seed funding could come from various sources - IFIs, environmental fees, EEO, government allocations, etc.
Multi-Apartment Buildings: Fair				
Institutional readiness		Would be operationalized through the Funds for Environmental Protection in FBiH and RS - but would require setting up rules and processes, as well as capacity building to operate as a financial institution.		
Legal and regulatory readiness		Would require legal acts to allow for such lending.		
Market readiness		Construction companies, etc. could be involved, but otherwise, no market readiness from the lending side.		

Option 4: Commercial financing (loans and credit enhancement tools)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• To consider how this would complement and not duplicate existing such scheme support by GEFF/EBRD and GGF. • Complementary (expansion) area would be in MABs - ability of HOAs to make decisions and borrow is an issue as cited in Gap Analysis. • Commercial banking sector has reasonably lengthy experience for already bankable populations – so development of credit enhancement tools for lending to hard-to-reach subsectors would be most important (MABs, low income)	• If established, mechanisms may be offered through existing Environmental Protection Funds – with ongoing support from environmental fees (potentially CO2 tax), EEO obligation, etc. • Coordination with commercial banks to systematically address how a scheme would be additional and equitable • Numerous banks already active in EBRD's Sustainable Energy Finance Facility (blending of capital sources + grants) so there is some capacity / understanding in the sector. • Better understanding of needs in the residential sector in order to offer end-user-tailored programs. • To be innovative, programmes would need to be focused on harder-to-reach sub-sectors, though scaling up existing mechanisms may also be attractive.
Multi-Apartment Buildings: Good				
Institutional readiness		Funds for Environmental Protection could partner to expand programmes.		
Legal and regulatory readiness		No legal barriers to this activity – though MAB lending possibilities are challenging especially in some cantons of FBiH.		
Market readiness		Financial institutions already involved in this sort of activity – though not currently engaged in MAB investing.		

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Identification and specification of entity to be established as a "Super ESCO" (potentially via Funds for Environmental Protection) • M&V regulation needs to be adopted and proper legal definitions of responsibilities • ESCOs in general are in the early phase of market development for public sector, so difficult to move to residential sector • Improve the knowledge and practical skills of potential investors regarding all phases of ESCO projects in order to get information on potential for increasing the revenues of their companies through the offer of energy services and creating your company ESCO.	• This mechanism could be used to focus on renewable energy (roof-top PV especially), where the financial parameters are generally good. • "Super ESCO" could be set up as a part of the Funds for Environmental Protection • Distribution companies (especially electricity) could be encouraged to act as ESCOs via an EEO mandate • Pilot projects to introduce ESCO concept in the public sector are underway, and experience is likely to be used to develop regulation to enable implementation of ESCO business model within private producers, including MABs. • Some parts of the systems necessary are operational (such as EMIS), but regulatory aspects are missing. Further development is expected within next 1-2 years.
Multi-Apartment Buildings: Fair				
Institutional readiness		Funds for Environmental Protection or others could partner to expand programmes. Potentially, existing municipally-owned Building Management Companies or energy distribution companies could be developed into aggregators.		
Legal and regulatory readiness		Would likely require secondary legal act(s) to establish an aggregator and / or enhance ESCO involvement.		
Market readiness		ESCOs for PV installations could engage in this sort of activity. Construction companies have some capacity for implementing EE – but not much ESCO capacity		

Option 6: Enhancing green mortgages

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Full implementation of Energy Performance Certificates in residential buildings required and policy targets for raising average level across country • Assessment of mortgage market with commercial lenders and scoping of potential support mechanisms that may be provided • Mortgage provider(s) would then need to be chosen for engagement (likely public competition) • Grey market would be a barrier • Banks tend to be less innovative when it comes to introducing new concepts and using reduced expected energy bills as a factor to increase credit score for citizens is not in line with rules set out by the banking system – so credit scoring models would have to be updated	• Line Ministries in FBiH and RS to implement Energy Performance Certificate (EPC) framework and set long-term policy objectives in relation to residential EE levels. • Energy service firms to work with mortgage providers on bundled offers. • Introducing credit line enhancement, in form of junior loan, guarantee (first loss) mechanism, or blended loan instrument might be of interest to commercial banks – could be supported through the Funds for Environmental Protection in partnership with Financial Institutions • Development of such financial instrument should take into consideration perception of local banking community, including the banking regulator and any rules about pricing of mortgages.
Multi-Apartment Buildings: Fair				
Institutional readiness		Funds for Environmental Protection could partner to expand programmes.		
Legal and regulatory readiness		Potential regulatory changes for banking sector.		
Market readiness		Bank innovation would be necessary with capacity development - especially for incorporation of technical aspects and measurement, reporting, and verification.		

Option 7: On-bill financing

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Utility companies are regulated differently depending on local authorities, meaning that possibilities would be specific to cantons and RS. • Capacity of district heating and other utilities (electricity distributors) is limited. • For MABs, decision-making limitations would need to be addressed.	• Possibility to deploy on-bill financing scheme might be possible depending on local circumstances on entity/cantonal level. Each canton in FBiH (and RS as an entity) has the authority to develop regulation to enable on-bill financing scheme in their jurisdiction, and that increases chances that in parts of BiH such scheme could be established, depending on local decision makers and capacity of the specific companies. • Electricity distribution companies could in theory be the main implementing bodies (especially if an EEO is introduced) but not many households heat using electricity, making this market small.
Multi-Apartment Buildings: Fair				
Institutional readiness		Entity / cantonal level involvement would be necessary (not currently active in this aspect)		
Legal and regulatory readiness		Would require development of regulatory amendments at entity / cantonal levels		
Market readiness		District Heating companies be well-placed to carry this out (and potentially natural gas and / or electricity distribution companies)		

Option 8: Property Assessed Clean Energy (PACE) loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• BiH is facing difficulties with property law implementation, including an incomplete land registry. A Law would be needed to introduce PACE concept, and the question remains which authority would pass such law – likely to be at the canton level in FBiH and by RS. • For MABs, decision-making limitations would need to be addressed.	• Would likely be implemented by cantons in FBiH, and at the entity level in RS. • Attaching loans to property was implemented in the privatisation of dwellings. However, this was a large social issue, and the privatisation was close to giveaway. • Introducing property assessed loans is doubtful in terms of its legality, and it seems unlikely that such intervention could take place, as it is not perceived as important enough.
Multi-Apartment Buildings: Poor				
Institutional readiness		Local property tax authorities are not currently positioned to implement this measure		
Legal and regulatory readiness		Local property taxes could potentially be adjusted for this measure, but would require significant work to develop the options at the cantonal level in FBiH and RS.		
Market readiness		Private sector actors could be involved for individual dwellings. For MABs, decision-making limitations would need to be addressed.		

Description of potential financing options and their readiness for Kosovo

Option 1: Public grant programmes (including tax incentives)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Identification of most promising measures (led by draft Building Renovation Strategy) • Training to improve supply base of qualified contractors in market for likely focus measures • Consideration of how scheme may assist in reducing grey economy activity • Gap Analysis identified very significant barriers in MAB sector in need of addressing for this sector to benefit • Develop awareness among home owners (particularly apartment owners) on issues related to retrofitting • For MABs, decision-making limitations would need to be addressed (required building association formation and engagement with housing management companies). This will require legislative amendment and enforcement.	• Grant-based programmes have already been implemented successfully with local financial institutions for individual dwellings • Kosovo Energy Efficiency Fund (KEEF) intends to extend to residential sector but mechanisms not yet defined • Grants typically support shallower measures for which project specific technical assistance may carry too high a transaction cost – rather an approved list managed by Kosovo Energy Efficiency Agency (KEEA) of registered products/providers could be developed
Multi-Apartment Buildings: Good				
Institutional readiness		Manageable within current context and planned expansion of capacity (Kosovo Energy Efficiency Fund expanded mandate)		
Legal and regulatory readiness		Manageable within the current legal context – though expanding the Kosovo Energy Efficiency Fund mandate would take a legal act. For MABs, legal changes required.		
Market readiness		Additional capacity of market actors required (contractors for implementing EE) as well as MAB capacity – i.e. institution-building.		

Option 2: Private sector mandates including energy efficiency obligation schemes (EEO)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• The Law on Energy Efficiency Article 10 foresees secondary legislation setting out use of EEO and/or Alternative Measures to achieve national obligation as well as design features of any EEO scheme. • Government of Kosovo not currently planning to pursue an EEO given tariff implications but this decision may be revisited with 2030 targets in mind. • Design of an EEO scheme would include identification of obligated parties, target end-use sectors and measures, M&V processes, scheme rules. • Generation of broad-based support for energy bill-based scheme in low tariff environment among government, obligated parties and consumer groups. • Consideration of how low-income groups will be addressed in the scheme.	• Ministry of Economy to decide on policy approach for Article 7 to 2030. • KEEA to be administrative entity allocating targets, accrediting savings, enforcing non-compliance, and reporting. • Regulator to allow costs pass-through in regulated tariffs • Technical support for energy saving calculation methodologies • Obligated parties may be energy retail firms or distribution utilities and either limited to network entities (electricity, gas, district heat) or all fuel types.
Multi-Apartment Buildings: Poor				
Institutional readiness		No institution interested in this mechanism currently.		
Legal and regulatory readiness		Would require legislative changes which are not currently envisaged.		
Market readiness		Obligated parties currently not engaged in EE on the end-user side.		

Option 3: EE Fund to provide direct loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• Identify target measures and consumers, design financing mechanism, set up allocation processes, and establish monitoring verification and enforcement requirements. • Ability of HOAs to borrow as cited in Gap Analysis is of particular relevance should scheme seek to address MABs also. This will require legislative amendment and enforcement.	• KEEF would design finance mechanism – likely best suited for MABs given the size of transactions. • KEEA would work with KEEF regarding technical assistance, project identification and preparation, and monitoring and verification.
Multi-Apartment Buildings: Fair				
Institutional readiness		KEEF mandate and capacity would need to be expanded to carry this out – in terms of adopting appropriate procedures and likely adding new staff		
Legal and regulatory readiness		KEEF mandate would need to be legally expanded / licenced to carry this out		
Market readiness		For single family housing, there is likely no possibility of implementing this mechanism since the transactions are too small. For MABs, additional market readiness activities are necessary (e.g. HMC development)		

Option 4: Commercial financing (loans and credit enhancement tools)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• To consider how this would complement and not duplicate existing such scheme support by GEFF/EBRD and GGF. • Complementary area would be in MABs – improving the ability of HOAs to borrow as cited in Gap Analysis is of particular relevance. • Commercial banking sector has reasonably lengthy experience – development of credit enhancement tools for lending to hard-to-reach subsectors (MABs, low income)	• Credit enhancement mechanisms may be offered through KEEF • Coordination with commercial banks to systematically address how a scheme would be additional and equitable – in particular targeting poorer populations • Numerous banks already active in EBRD's Sustainable Energy Finance Facility (blending of capital sources + grants) so there is some capacity / understanding in the sector
Multi-Apartment Buildings: Good				
Institutional readiness		KEEF could partner to expand programmes.		
Legal and regulatory readiness		Could be run through KEEF which would involve regulatory amendments. Otherwise, if run through ministries, likely a secondary legal act required.		
Market readiness		Financial institutions already involved in this sort of activity.		

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Identification and specification of entity to be established as a "Super ESCO" and / or aggregator • Legislative amendments and drafting to establish and invest in entity via government budget stipulating objectives, responsibilities and activities. • Drafting of model contract.	• This mechanism could be used to focus on renewable energy (roof-top PV especially), where the financial parameters are generally good. • Ministry of Economy to finalise related secondary legislation under Law on Energy Efficiency • KEEA to implement related actions. • Not likely possible with MABs due to lack of institutional framework for their management.
Multi-Apartment Buildings: Fair				
Institutional readiness		ESCOs for PV installations could engage in this sort of activity. KEEF or KEEA could partner to expand programmes. Somewhat scalable for PV installations. For EE, a new aggregator would need to be established.		
Legal and regulatory readiness		Legislation for ESCO development and MAB management currently being discussed.		
Market readiness		MAB management capacity and ESCO companies not currently well developed. KEEA may be able to provide technical support including development of one-stop-shops.		

Option 6: Enhancing green mortgages

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair Multi-Apartment Buildings: Poor			• Residential mortgage market in Kosovo requires further development with greater security of title. • Assessment of mortgage market with commercial lenders and scoping of potential support mechanisms that may be provided. • Implementation of residential Energy Performance Certificate (EPC) framework once registry is established. • Inappropriate current institutional / legal framework for MABs – though for new buildings it may be applicable.	• Ministry of Environment and Spatial Planning (MESP) to implement EPC framework • MESP to coordinate with Ministry of Economy on long-term policy objectives in relation to residential EPC levels. • KEEF to consider guarantee mechanism to commercial lenders of green mortgages. • Energy service firms to work with mortgage providers on bundled offers. • Development of such financial instrument should take into consideration perception of local banking community, including the banking regulator and any rules about pricing of mortgages.
Institutional readiness		No specific institutions required for single-family households. For MABs, institutions not currently adequate.		
Legal and regulatory readiness		Bank innovation would be necessary – and potential regulatory changes for banking sector.		
Market readiness		Finance institutions have been engaged with similar activities for single dwellings - not for MABs.		

Option 7: On-bill financing

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Necessary legislative amendments will depend on consumer lending legislation and treating investment as a service, not a loan. • Regulatory development may be required to set out items such as rules for implementation, covering authorisations for participation, code of practice, necessary assessments and confirmation prior to entry into a plan, terms of the plan, obligations of plan providers, and disclosure upon transactions. • Regulatory development would also likely require strategic thinking about the role of energy supplier (DH) in stimulating EE amongst final consumers - perhaps with an energy efficiency obligation. • Requires development with energy market retail firms, finance providers and contractors • For MABs - which are likely the main potential clients - housing association formation and decision-making limitations would need to be addressed	• Ministry of Economy to develop necessary regulatory amendments and set out mechanism model. • Retail firms (KESCO or DH systems) would deliver on-bill options to consumer and coordinate with financing entity - interest and capacity may be limited. • Building assessments may be delivered separately from independent providers or bundled with retail offer.
Multi-Apartment Buildings: Fair				
Institutional readiness		Governance capacity of the sector would need to be expanded.		
Legal and regulatory readiness		Regulatory amendments would likely be required.		
Market readiness		District Heating companies likely the only institution which could carry this out, and would require significant steps to achievement - though the size of the companies involved means it may be possible. Primarily applicable for households / buildings using electricity for heating and cooling.		

Option 8: Property Assessed Clean Energy (PACE) loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• Review of relevant taxes that may carry on-tax finance – collection and enforcement of property taxes in Kosovo is sub-par and thus not considered ready for implementation of a PACE scheme. • Likely to require legislative amendment to enable taxes to carry EE loans – or for valuations of energy efficient properties to be considered higher. • Familiarisation and development of capacity within municipalities for administering a scheme. • Identification of source of capital finance (third-party finance?).	• Ministry of Economy to develop necessary legislative amendments with Ministry of Finance and Economy. • Identification of promising municipality for developing trial scheme (potentially Pristina given Green City Action Plan adoption). • KEEA may provide technical support including development of one-stop-shops.
Multi-Apartment Buildings: Poor				
Institutional readiness		Development of municipal taxation programmes would be necessary (including enforcement).		
Legal and regulatory readiness		Likely to require significant legislative changes		
Market readiness		KEEA may be able to provide technical support including development of one-stop-shops.		

Description of potential financing options and their readiness for Montenegro

Option 1: Public grant programmes (including tax incentives)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Budgetary commitment by Government to provision of support • Identification of most promising measures (led by adopting Building Renovation Strategy) • Consideration of how scheme may assist in reducing grey economy activity • Suitable also for MABs • Minimum Energy Performance Requirements for buildings and Energy Certification of Buildings system also required	• Implementation of a grant program could be facilitated by existing Eko Fund via various public calls. • Could be implemented through financial institutions (paying down principal) as with the EBRD's SEFF programme, or via a voucher programme for specific appliances / energy consuming products. • For MABs in particular, municipalities (e.g. Podgorica) can be involved in helping identify priority end-users.
Multi-Apartment Buildings: Good				
Institutional readiness		Existing similar schemes can be scaled. Manageable within current institutional context.		
Legal and regulatory readiness		Existing legal and regulatory framework allow for this mechanism.		
Market readiness		Current market actors for the most part have the capacity for this mechanism.		

Option 2: Private sector mandates including energy efficiency obligation schemes (EEO)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Development of legislation requiring an EEO scheme - Unclear if there is political interest / will to do so • Design of an EEO scheme including identification of obligated parties, target end-use sectors and measures, M&V processes, scheme rules • Generation of broad-based support for energy bill-based scheme in low tariff environment among government, obligated parties, and consumer groups • Consideration of how low-income groups should be addressed in the scheme	• Ministry of Capital Investment to act as policy setting entity and likely to be administrative entity allocating targets, accrediting savings, enforcing non-compliance, and reporting. • Elektroprivreda Crne Gore would likely be the only obligated party • Technical support for energy saving calculation methodologies
Multi-Apartment Buildings: Fair				
Institutional readiness		Ministry of Capital Investments would be the main institution overseeing this mechanism.		
Legal and regulatory readiness		Legislative amendments required to allow for EEO scheme.		
Market readiness		Elektroprivreda Crne Gore would likely be the only obligated party and would require capacity building – including setting up support schemes, implementation, and Measurement, Reporting, and Verification.		

Option 3: EE Fund to provide direct loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Identify target measures and consumers, design financing mechanism, set up allocation processes, and establish monitoring verification and enforcement requirements. • MABs may be a good specific target for this activity – as single dwellings are likely to have investments that are too small to justify public loans.	• Eko Fund would design finance mechanism and could also provide technical assistance, project identification and preparation, and monitoring and verification. • Work with municipalities on identifying priority buildings (especially MABs) and promoting the lending mechanism could be successful.
Multi-Apartment Buildings: Good				
Institutional readiness		Eko Fund could carry this out but would need further capacity development.		
Legal and regulatory readiness		Eko Fund already legally allowed to carry out this measure.		
Market readiness		Generally the market is in a good position to carry out investments / lending – though HOA / HMC development would be useful. Unlikely that – given deal size – single dwellings would be engaged in this mechanism.		

Option 4: Commercial financing (loans and credit enhancement tools)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• To consider how this would complement and not duplicate existing such scheme support by GEFF/EBRD and Green for Growth Fund. • Complementary area would be to focus on lending to MABs and poorer households. • Commercial banking sector has reasonably lengthy experience – development of credit enhancement tools for lending to hard-to-reach subsectors (MABs, low income)	• Eko Fund would design support mechanism and could also provide technical assistance, project identification and preparation, and monitoring and verification. • Work with municipalities on identifying priority buildings (especially MABs) and promoting the lending mechanism with financial institutions could be successful.
Multi-Apartment Buildings: Good				
Institutional readiness		Eko Fund could partner to expand existing programmes.		
Legal and regulatory readiness		Such programmes have already been carried out and no legal / regulatory barriers are apparent.		
Market readiness		Financial institutions already involved in this sort of activity.		

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Identification and specification of entity to be established as a "Super ESCO" (potentially via Eko Fund) • M&V regulation needs to be adopted and proper legal definitions of responsibilities for EE. • ESCOs in general are in the early phase of market development for public sector, so difficult to move to residential sector. It would likely only work related to PV installations (where financial characteristics are fairly attractive) – though EE may be possible given that there is one major electricity distribution company and electricity is used as a heating source in many households. • This mechanism could also work for MAB investments.	• "Super ESCO" could be set up as a part of the Eko Fund • Elektroprivreda Crne Gore (electricity distributor) could be encouraged to act as ESCO via an EEO mandate • Housing Management Companies could also serve as ESCOs. • PV installations are the likely investments to be made initially – though energy efficiency may be possible.
Multi-Apartment Buildings: Fair				
Institutional readiness		Eko Fund could partner to expand programmes. Potentially, existing municipally-owned Building Management Companies or energy distribution companies could be developed into aggregators.		
Legal and regulatory readiness		Would likely require secondary legal act(s) to establish an aggregator and / or enhance ESCO involvement.		
Market readiness		ESCOs for PV installations could engage in this sort of activity. Additionally, Housing Agency Podgorica could serve as an aggregator in Podgorica, but would require capacity development (to aggregate investments and implement ongoing repayments). Alternatively, a national-level institution could take this on.		

Option 6: Enhancing green mortgages

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Full implementation of Energy Performance Certificates in residential buildings required and policy targets for raising average level across country • Assessment of mortgage market with commercial lenders and scoping of potential support mechanisms that may be provided • Mortgage provider(s) would then need to be chosen for engagement (likely public competition) • Grey market would be a barrier • Banks tend to be less innovative when it comes to introducing new concepts and using reduced expected energy bills as a factor to increase credit score for citizens is not in line with rules set out by the banking system – so credit scoring models would have to be updated • For MABs, this would mostly be applicable for building developers / new buildings built, though for specific dwellings within the building it would be applicable (or for renovation loans for the whole building).	• Ministry of Capital Investments to implement Energy Performance Certificate (EPC) framework and set long-term policy objectives in relation to residential EE levels. • Eko Fund could Introduce a credit line enhancement, in form of junior loan, guarantee (first loss) mechanism, or blended loan instrument might be of interest to commercial banks. • Eko Fund could also provide technical assistance, project identification and preparation, and monitoring and verification. • Development of such financial instrument should take into consideration perception of local banking community, including the banking regulator and any rules about pricing of mortgages.
Multi-Apartment Buildings: Fair				
Institutional readiness		Institutional management of such a programme would be either with the Ministry of Capital Investments or Eko Fund – which likely have capacity to manage it.		
Legal and regulatory readiness		Potential regulatory changes required for the banking sector – as well as EPC requirements.		
Market readiness		Bank innovation would be necessary – though Eko Fund could implement this programme. For MABs, this is only really applicable for new buildings.		

Option 7: On-bill financing

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair Multi-Apartment Buildings: Poor			• Necessary legislative amendments will depend on consumer lending legislation and treating investment as a service, not a loan for electricity company • Regulatory development may be required to set out items such as rules for implementation, covering authorisations for participation, code of practice, necessary assessments and confirmation prior to entry into a plan, terms of the plan, obligations of plan providers, and disclosure upon transactions • Requires development with Elektroprivreda Crne Gore – may require an EEO scheme to be implemented to stimulate interest • For MABs, this scheme wouldn't likely work since each consumer has a separate bill / contract with energy provider.	• With the exception of electricity distributor, no institution to undertake this effort. • Ministry of Capital Investments could develop necessary regulatory amendments and set out mechanism model. • Retail firms (electricity distributor) would deliver on-bill options to consumer and coordinate with financing entity. • Building assessments may be delivered separately from independent providers or bundled with retail offer.
Institutional readiness		Ministry of Capital Investments could develop necessary regulatory amendments and set out the mechanism model.		
Legal and regulatory readiness		Regulatory amendments necessary to set out the mechanism model.		
Market readiness		Only really applicable for households using electricity for heating and cooling. Only one company would be well-placed to carry this out (Elektroprivreda Crne Gore) and it's unclear if this could be possible to put such loans on electricity bills. EPCG will soon start with an ambitious SOLARI 3000+ project (prosumers for households), meaning PV roof installation including on-bill repayment. This also can be solution for EE issues, but also it may be obstacle, since EPCG is the developer and owner of the SOLARI project, so may favour production over efficiency. For MABs, this scheme wouldn't likely work.		

Option 8: Property Assessed Clean Energy (PACE) loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Property taxes in Montenegro exist and municipalities have some flexibility in changing them – but this option has not yet been discussed. • Likely to require changes in tax decisions for local municipalities and model contracts enable taxes to carry EE loans. • Familiarisation and development of capacity within municipalities for administering a scheme. • Identification of source of capital finance (third-party finance?)	• Municipalities would need to establish the legality of the mechanism / model contracts. Ministry of Capital Investments to develop necessary legislative amendments with Ministry of Finance if needed. • Identification of promising municipality for developing trial scheme. • Eko Fund may provide technical support including development of one-stop-shops. • Third party capital financing for technical assistance, capital injections (likely to go via national government distributed to municipalities).
Multi-Apartment Buildings: Fair				
Institutional readiness		Municipalities already engaged in local taxation based on property taxes, and there are public housing agencies – which would need additional capacity development in terms of ensuring the investments are appropriate and executing contracts.		
Legal and regulatory readiness		Local property taxes could probably be adjusted for this measure, but would require significant work to develop the options.		
Market readiness		Housing management companies and construction companies would require some capacity development for this mechanism (in terms of investment identification and implementation), but they are active in the market.		

Description of potential financing options and their readiness for North Macedonia

Option 1: Public grant programmes (including tax incentives)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Budgetary commitment by Government to provision of support is necessary • Identification of most promising measures (led by adopting Building Renovation Strategy) • Consideration of how scheme may assist in reducing grey economy activity • Suitable also for MABs • Updated Minimum Energy Performance Requirements for buildings and Energy Certification of Buildings system also required	• Implementation of a grant program could be facilitated by municipalities, the planned EE Fund or existing measures from the Government of North Macedonia via various public calls. • Could be implemented through financial institutions (paying down principal) as with the EBRD's SEFF programme, or via a voucher programme for specific appliances / energy consuming products. • For MABs in particular, municipalities (e.g. Skopje) can be involved in helping identify priority end-users.
Multi-Apartment Buildings: Good				
Institutional readiness		Manageable within current institutional context – though would require upscaling		
Legal and regulatory readiness		Existing legal and regulatory framework allow for this mechanism.		
Market readiness		Current market actors for the most part have the capacity for this mechanism.		

Option 2: Private sector mandates including energy efficiency obligation schemes (EEO)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Development of secondary legislation for an EEO scheme • Design of an EEO scheme including identification of obligated parties, target end-use sectors and measures, M&V processes, scheme rules • Generation of broad-based support for energy bill-based scheme in low tariff environment among government, obligated parties, and consumer groups • Consideration of how low-income groups should be addressed in the scheme	• Ministry of Economy to act as policy setting entity and likely to be administrative entity allocating targets, accrediting savings, enforcing non-compliance, and reporting. • EVN AD Skopje could be the only obligated party – though potentially DH companies could be as well. • Technical support for energy saving calculation methodologies
Multi-Apartment Buildings: Fair				
Institutional readiness		Ministry of Economy to act as policy setting entity and likely to be administrative entity allocating targets – limited current capacity for this in terms of ability to processing grants and implementing MRV mechanisms.		
Legal and regulatory readiness		Secondary legislation that is the Decree on EEO schemes is required (which is under preparation).		
Market readiness		EVN AD Skopje could be the only obligated party – though potentially DH companies could be as well – would require capacity development– including setting up support schemes, implementation, and MRV. Implementing companies (construction, etc.) do exist.		

Option 3: EE Fund to provide direct loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• Identify target measures and consumers, design financing mechanism, set up allocation processes, and establish monitoring verification and enforcement requirements. • MABs may be a good specific target for this activity – as single dwellings are likely to have investments that are too small to justify public loans.	• EE Fund would need a mandate to design a finance mechanism and could also provide technical assistance, project identification and preparation, and monitoring and verification. • Work with municipalities on identifying priority buildings (especially MABs) and promoting the lending mechanism could be successful.
Multi-Apartment Buildings: Fair				
Institutional readiness		Proposed EE Fund could carry this out but would need to be mandated to do so.		
Legal and regulatory readiness		Would require including this in the activities of the EE Fund in the proposed legislation.		
Market readiness		Implementing companies (construction, etc.) do exist and HOAs also exist. For single family dwellings, the transactions are likely too small.		

Option 4: Commercial financing (loans and credit enhancement tools)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• To consider how this would complement and not duplicate existing such scheme support by GEFF/EBRD and Green for Growth Fund. • Complementary area would be to focus on lending to MABs and poorer households. • Commercial banking sector has reasonably lengthy experience - development of credit enhancement tools for lending to hard-to-reach subsectors (MABs, low income)	• EE Agency and / or Ministry of Economy would design support mechanism (potentially via the planned EE Fund) and could also provide technical assistance, project identification and preparation, and monitoring and verification. • Work with municipalities on identifying priority buildings (especially MABs) and promoting the lending mechanism with financial institutions could be successful.
Multi-Apartment Buildings: Fair				
Institutional readiness		Planned EE Fund could partner to expand programmes.		
Legal and regulatory readiness		Such programmes have already been carried out and no legal / regulatory barriers are apparent.		
Market readiness		Financial institutions already involved in this sort of activity for single dwellings. Additional work for MABs required.		

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Identification and specification of entity to be established as a "Super ESCO" and / or aggregator. • M&V regulation needs to be adopted and proper legal definitions of responsibilities for EE. • ESCOs in general are in the early phase of market development for public sector, so difficult to move to residential sector. It would likely only work related to PV installations (where financial characteristics are fairly attractive) – though EE may be possible given that there is one major electricity distribution company and electricity is used as a heating source in many households. • This mechanism could also work for MAB investments.	• "Super ESCO" could be set up as a part of the planned EE Fund • EVN AD Skopje (electricity distributor) could be encouraged to act as ESCO via an EEO mandate • Housing Management Companies could also serve as ESCOs. • PV installations are the likely investments to be made initially – though energy efficiency may be possible especially related to heat-pumps for households using electricity for heating and cooling.
Multi-Apartment Buildings: Fair				
Institutional readiness		"Super ESCO" or aggregator could be set up as a part of the planned EE Fund		
Legal and regulatory readiness		Legal specification required of entity to be established as a "Super ESCO" and / or aggregator. M&V regulation needs to be adopted and proper legal definitions of responsibilities for EE.		
Market readiness		ESCOs for PV installations could engage in this sort of activity. No institution exists which could serve as an aggregator.		

Option 6: Enhancing green mortgages

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Full implementation of Energy Performance Certificates in residential buildings required and policy targets for raising average level across country • Assessment of mortgage market with commercial lenders and scoping of potential support mechanisms that may be provided • Mortgage provider(s) would then need to be chosen for engagement (likely public competition) Grey market would be a barrier • Banks tend to be less innovative when it comes to introducing new concepts and using reduced expected energy bills as a factor to increase credit score for citizens is not in line with rules set out by the banking system – so credit scoring models would have to be updated • For MABs, this would mostly be applicable for building developers / new buildings built, though for specific dwellings within the building it would be applicable (or for renovation loans for the whole building).	• Ministry of Economy to implement Energy Performance Certificate (EPC) framework and set long-term policy objectives in relation to residential EE levels. • Ministry of Economy or planned EE Fund could Introduce a credit line enhancement, in form of junior loan, guarantee (first loss) mechanism, or blended loan instrument might be of interest to commercial banks. • Energy Agency or planned EE Fund could also provide technical assistance, project identification and preparation, and monitoring and verification. • Development of such financial instrument should take into consideration perception of local banking community, including the banking regulator and any rules about pricing of mortgages.
Multi-Apartment Buildings: Fair				
Institutional readiness		Proposed EE Fund could partner to expand programmes.		
Legal and regulatory readiness		Potential regulatory changes for banking sector required related to risk definition.		
Market readiness		Bank innovation would be necessary though somewhat already underway with blended financing for single dwellings.		

Option 7: On-bill financing

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Necessary legislative amendments will depend on consumer lending legislation and treating investment as a service, not a loan for electricity company • Regulatory development may be required to set out items such as rules for implementation, covering authorisations for participation, code of practice, necessary assessments and confirmation prior to entry into a plan, terms of the plan, obligations of plan providers, and disclosure upon transactions • Requires development with either DH company or EVN AD Skopje – may require an EEO scheme to be implemented to stimulate interest • For MABs using electricity, this scheme wouldn't likely work since each consumer has a separate bill / contract with energy provider – unless large-scale heat/cooling can be applied.	• Potentially suitable for DH company and electricity supply firms (such as EVN AD Skopje). • Ministry of Economy could develop necessary regulatory amendments and set out mechanism model. • Retail firms (electricity supply / DH company) would deliver on-bill options to consumer and coordinate with financing entity. • Building assessments may be delivered separately from independent providers or bundled with retail offer.
Multi-Apartment Buildings: Fair				
Institutional readiness		Only really applicable for households using electricity for heating and cooling and DH-connected buildings.		
Legal and regulatory readiness		Various regulatory amendments likely required – though likely secondary legislation.		
Market readiness		One electricity company would be well-placed to carry this out (EVN AD Skopje) and it's unclear if this could be possible to put such loans on electricity bills. DH companies could potentially be implementing bodies.		

Option 8: Property Assessed Clean Energy (PACE) loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Property taxes in N. Macedonia exist and municipalities have some flexibility in changing them – but this option has not yet been discussed and the range of the tax on property as currently defined in the Law might not be sufficient to cover for this type of action. • Likely to require changes in tax decisions for local municipalities and model contracts to enable taxes to carry EE loans. • Familiarisation and development of capacity within municipalities for administering a scheme. • Identification of source of capital finance (third-party finance?)	• Municipalities would need to establish the legality of the mechanism / model contracts. Ministry of Economy to develop necessary legislative amendments with Ministry of Finance (which develops tax legislation) if needed. • Identification of promising municipality for developing trial scheme. • Expected EE Fund may provide technical support including development of one-stop-shops. • Third party capital financing for technical assistance, capital injections (likely to go via national government distributed to municipalities).
Multi-Apartment Buildings: Fair				
Institutional readiness		Municipalities already engaged in local taxation based on property taxes, and there are public housing agencies – which would need additional capacity development in terms of ensuring the investments are appropriate and executing contracts.		
Legal and regulatory readiness		Local property taxes could probably be adjusted for this measure, but would require significant work to develop the options.		
Market readiness		Housing management companies and construction companies would require some capacity development for this mechanism (in terms of investment identification and implementation), but they are active in the market.		

Description of potential financing options and their suitability for Serbia

Option 1: Public grant programmes (including tax incentives)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• Identification of most promising measures and buildings (led by adopting Building Renovation Strategy) • Consideration of how scheme may assist in reducing grey economy activity • Suitable also for MABs – though awareness raising and implementation via Housing Management Companies is critical • Minimum Energy Performance Requirements for buildings and Energy Certification of Buildings system also required	• Ministry of Construction, Transport and Infrastructure to establish minimum energy performance standards and energy certification processes. • Implementation of a grant program could be facilitated by planned Ministry of Mining and Energy (MoME) EE directorate for financing of EE via various public calls. • Could be implemented through financial institutions (paying down principal) as with the EBRD's SEFF programme • Planned for implementation via a voucher programme for specific appliances / energy consuming products. • For MABs in particular, municipalities (e.g. Belgrade, Novi Sad, others) can be involved in helping identify priority end-users.
Multi-Apartment Buildings: Good				
Institutional readiness		Manageable within current context and planned expansion of capacity (EE Directorate). Existing similar schemes can be scaled		
Legal and regulatory readiness		Relevant regulatory framework in development –requires additional work in defining programmes.		
Market readiness		Current market actors for the most part have the capacity for this mechanism.		

Option 2: Private sector mandates including energy efficiency obligation schemes (EEO)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Development of secondary legislation for an EEO scheme - Unclear if there is political interest / will to do so. • Design of an EEO scheme including identification of obligated parties, target end-use sectors and measures, M&V processes, scheme rules • Generation of broad-based support for energy bill-based scheme in low tariff environment among government, obligated parties, and consumer groups • Consideration of how low-income groups should be addressed in the scheme	• MoME to act as policy setting entity and likely to be administrative entity allocating targets, accrediting savings, enforcing non-compliance, and reporting. • Obligated parties could include electricity distribution companies, natural gas distribution companies, and larger district heating companies. • Technical support for energy saving calculation methodologies
Multi-Apartment Buildings: Fair				
Institutional readiness		MoME would be the main institution overseeing this mechanism.		
Legal and regulatory readiness		Secondary legislation would be required.		
Market readiness		Requirement for District Heating and / or natural gas and / or electricity distribution company would mean scaled investments – but would require significant engagement.		

Option 3: EE Fund to provide direct loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• Institution would need to be identified and legally empowered to carry out this activity. • Target measures and consumers, design financing mechanism would need to be established, along with setting up allocation processes, and establish monitoring verification and enforcement requirements. • MABs may be a good specific target for this activity – as single dwellings are likely to have investments that are too small to justify public loans.	• If an institution were developed to carry out the activity, it would design finance mechanism and could also provide technical assistance, project identification and preparation, and monitoring and verification. • Work with municipalities on identifying priority buildings (especially MABs) and promoting the lending mechanism could be successful.
Multi-Apartment Buildings: Poor				
Institutional readiness		No institution exists which is well-placed to carry this out		
Legal and regulatory readiness		Would require a legal change to allow for an institution to carry this out.		
Market readiness		Financial institutions in place to some extent to cooperate with appropriate institution.		

Option 4: Commercial financing (loans and credit enhancement tools)

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Good			• To consider how this would complement and not duplicate existing such scheme support by GEFF/EBRD and Green for Growth Fund. • Complementary area would be to focus on lending to MABs and poorer households. • Commercial banking sector has reasonably lengthy experience for single dwellings but not for MABs or poorer households. Development of credit enhancement tools for lending to hard-to-reach subsectors (MABs, low income) would be appropriate.	• EE Directorate in MoME would design support mechanism and could also provide technical assistance, project identification and preparation, and monitoring and verification. • Work with municipalities on identifying priority buildings (especially MABs) and promoting the lending mechanism with financial institutions could be successful.
Multi-Apartment Buildings: Good				
Institutional readiness		EE Directorate could partner to expand existing programmes.		
Legal and regulatory readiness		Such programmes have already been carried out and no legal / regulatory barriers are apparent.		
Market readiness		Financial institutions already involved in this sort of activity.		

Option 5: Public-private partnership through ESCOs and Super ESCOs / aggregators

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Identification and specification of entity to be established as a "Super ESCO" • M&V regulation needs to be adopted and proper legal definitions of responsibilities for EE. • ESCOs in general are in development for public sector, so difficult to move to residential sector. It would likely only work related to PV installations (where financial characteristics are fairly attractive) – though EE may be possible given that there is one major electricity distribution company and electricity is used as a heating source in many households. • This mechanism could also work for MAB investments.	• "Super ESCO" could potentially be set up as a part of the Investment and Export Promotion Agency • Elektroprivreda Srbija (electricity distributor) could be encouraged to act as ESCO via an EEO mandate • Housing Management Companies could also serve as ESCOs. • PV installations are the likely investments to be made initially – though energy efficiency may be possible.
Multi-Apartment Buildings: Fair				
Institutional readiness		Investment and Export Promotion Agency could partner to expand programmes.		
Legal and regulatory readiness		Private finance involved would mean high leverage of public financing		
Market readiness		ESCOs for PV installations could engage in this sort of activity. HMCs could be involved in EE – though an aggregator would be useful to establish / identify.		

Option 6: Enhancing green mortgages

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Full implementation of Energy Performance Certificates in residential buildings required and policy targets for raising average level across country • Assessment of mortgage market with commercial lenders and scoping of potential support mechanisms that may be provided • Mortgage provider(s) would then need to be chosen for engagement (likely public competition) • Grey market would be a barrier • Banks tend to be less innovative when it comes to introducing new concepts and using reduced expected energy bills as a factor to increase credit score for citizens is not in line with rules set out by the banking system – so credit scoring models would have to be updated • For MABs, this would mostly be applicable for building developers / new buildings built, though for specific dwellings within the building it would be applicable (or for renovation loans for the whole building).	• Ministry of Construction, Transport and Infrastructure to implement Energy Performance Certificate framework and set long-term policy objectives in relation to residential EE levels. • EE Directorate could Introduce a credit line enhancement, in form of guarantee (first loss) mechanism via a grant. • Other organisation (e.g. Investment and Export Promotion Agency) could set up a blended loan instrument which might be of interest to commercial banks. • EE Directorate could also provide technical assistance, project identification and preparation, and monitoring and verification. • Development of such financial instrument should take into consideration perception of local banking community, including the banking regulator and any rules about pricing of mortgages.
Multi-Apartment Buildings: Fair				
Institutional readiness		EE Directorate could partner with financial institutions for such a programme.		
Legal and regulatory readiness		Bank innovation would be necessary – and potential regulatory changes for banking sector.		
Market readiness		Financial institutions already involved in this sort of activity but would require additional development if not a blending instrument.		

Option 7: On-bill financing

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Fair			• Requires development with District Heating Companies (potentially also natural gas and electricity distribution companies, but this is less likely to be viable) – may require an EEO scheme to be implemented to stimulate interest • For MABs, this scheme could work – as shown in Šabac.	• District Heating companies best suited to carry out this mechanism. • MoME's EE Directorate could develop support mechanisms and support with technical documentation, awareness raising, guarantee mechanisms, and grants where appropriate (in particular for poorer households). • Municipalities could help with cofinance (grants) and identifying buildings that are most relevant for the measure.
Multi-Apartment Buildings: Good				
Institutional readiness		EE Directorate could develop support mechanisms in cooperation with municipalities.		
Legal and regulatory readiness		Legal framework is in place – no barriers identified.		
Market readiness		Some district heating companies have capacity to carry this out – but it would need scaling up.		

Option 8: Property Assessed Clean Energy (PACE) loans

General readiness (Good, fair, poor)		Notes	Pre-conditions required to implement (not already met)	Notes on how it could be implemented
Single dwellings: Poor			• Property taxes in Serbia exist and municipalities have some flexibility in changing them – but this option has not yet been discussed and it may not be possible to raise them to the level to pay for investments. • Likely to require changes in tax decisions for local municipalities and model contracts enable taxes to carry EE loans. • Familiarisation and development of capacity within municipalities for administering a scheme. • Identification of source of capital finance (third-party finance?)	• Municipalities would need to establish the legality of the mechanism / model contracts. Ministry of Construction, Transport and Infrastructure (to be confirmed) would develop necessary legislative amendments with Ministry of Finance if needed. • Identification of promising municipality for developing trial scheme (Belgrade? Novi Sad? Šabac? Užice?). • EE Directorate may provide technical support including development of one-stop-shops. • Third party capital financing for technical assistance, capital injections (likely to go via national government distributed to municipalities).
Multi-Apartment Buildings: Poor				
Institutional readiness		Some municipalities may have interest / capacity in developing this measure – but would need to be developed.		
Legal and regulatory readiness		Local property taxes could probably be adjusted for this measure, but would require significant work to develop the options.		
Market readiness		Housing management companies and construction companies would require some capacity development for this mechanism (in terms of investment identification and implementation), but they are active in the market.		

Contact

World Bank:

Tamara Babayan - tbabayan@worldbank.org

Pedzi Makumbe - pmakumbe@worldbank.org

Consultant team:

Seth Landau - seth@ecoltdgroup.com

Marijan Gajšak - marijan@ecoltdgroup.com

David Williams - david.williams@eca-uk.com

ecoltdgroup.com