

# Regional: Assessment of the Residential Energy Efficiency Investment Potential in the Western Balkans

## Task 3 Recommendations

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# Executive Summary

In this report we have made use of the data gathered in the market overview (task 1), and policy recommendations (task 2), to develop recommendations for designing an integrated Residential Energy Efficiency Programme.

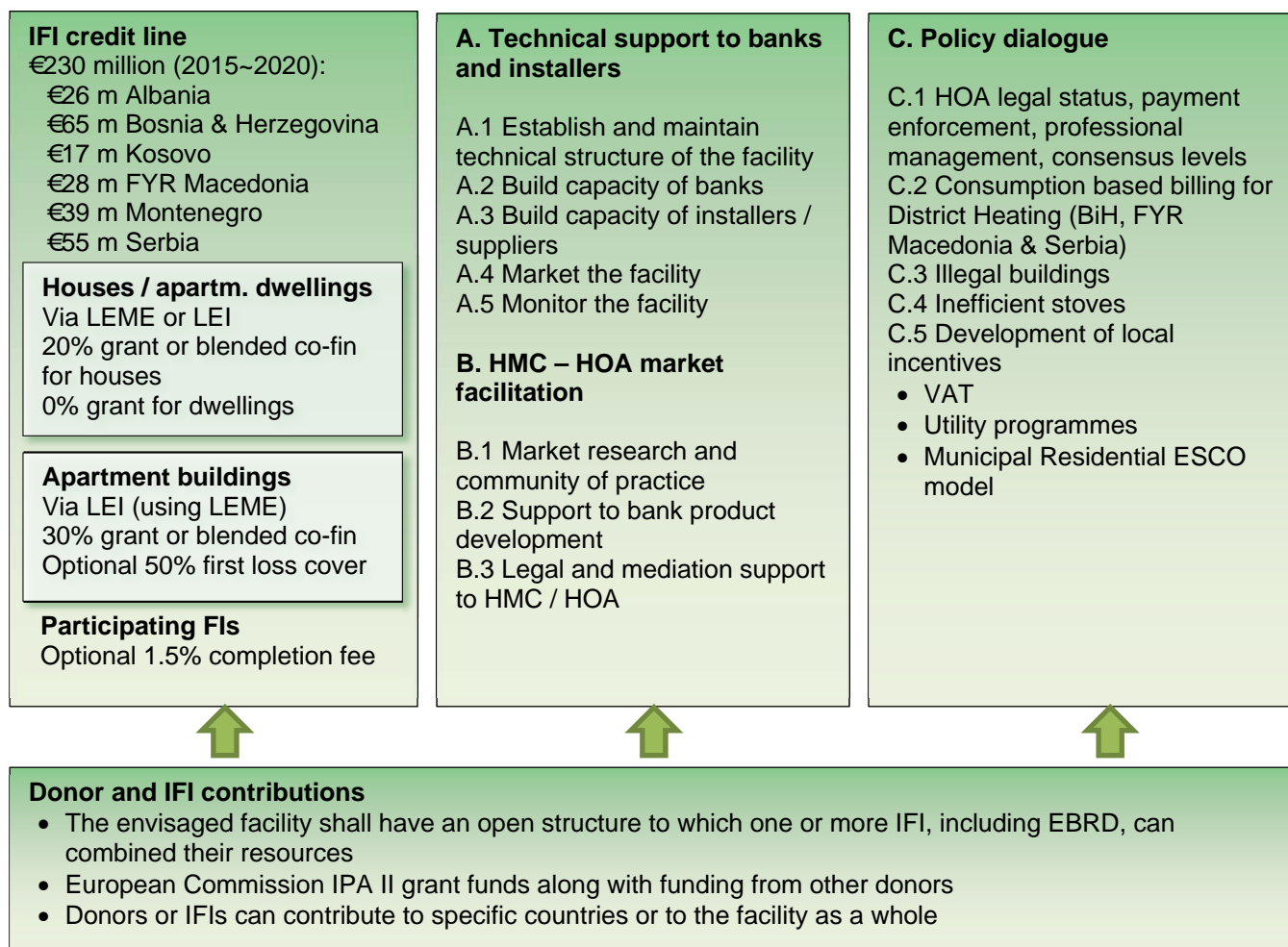
## Best EU practices for residential energy efficiency financing

A brief analysis of experience in the EU is presented. The analysis focuses on approaches taken to create markets for energy efficiency in residential buildings in such a way as to lever private sector funds through the judicious use of incentives. Seven type of financial incentive are described and the approach from 14 EU countries described. Overall direct subsidies are most common, coupled with dedicated credit lines. Also common are interest rate subsidies and lower VAT levels and other tax incentives. Successful market creation requires a package of measures that remove market barriers by creating an enabling policy environment, providing technical assistance and financing. The three elements must all be adapted to the specific conditions of the country in which the market is to be created and take into account the barriers to financing that exist in that country.

## Proposed overall facility structure

The proposed facility will operate in all six countries of the region, and consist of three main components – 1) credit lines coupled with financial incentives, 2) technical assistance and 3) policy dialogue. This structure is shown in the figure below.

### Western Balkans Residential Energy Efficiency Financing Facility



### *Market size and size of credit line facility*

An economic market size has been determined from housing stock data collected in the task 1 report. There is high demand for loans for households across the region. Based on housing stock, adjusted for houses that do not need renovation, and removing the poorest 20% of households economic potential was estimated. The market size is very large: approximately €23,400 million for houses, €1,600 million and €5,100 million for apartment buildings, offering total energy savings of 79TWh / year and GHG reductions of 20 MT/year.

A 4-5 year facility could have immediate success throughout the region in lending to individual house owners. Lending to HOAs needs legislative development and facilitation. It could start in Serbia and Montenegro, then be extended to Macedonia, and then BiH if some of the key legislative barriers can be removed. Assuming incentive levels given below, we have proposed a total facility size of €230 million facility, comprised of €26 m in Albania, €65 m in Bosnia & Herzegovina, €17 m in Kosovo, €28 m in FYR Macedonia, €39 m in Montenegro and €55 m Serbia. Of the total facility, approximately €210 million for individual houses, and €20 million for buildings.

### *Size of sub-loans*

Based on costs for advanced measures (including demand and supply side) in reference buildings with average dimensions for each country (roughly 88 m<sup>2</sup> for houses, 65 m<sup>2</sup> for dwellings in apartments, and 990 m<sup>2</sup> for apartment buildings, we determined typical costs. These median figures were increased by 2.5 times, with the resulting suggested size of sub-loans:

Detached houses: €45,000

Apartments:

- Dwelling: €20,000
- Building: €300,000

### *Eligibility criteria*

We propose eligibility criteria for owners of houses, apartment dwellings and apartment building HOAs. Provision is made for individual owners, home owner associations, and corporate aggregators. For owners of houses and dwellings in apartment buildings we propose that equipment must come from the List of Eligible Material and Equipment (LEME). For loans to groups of owners or HOAs in apartment buildings, we have explicitly provided for owners of commercial premises in the buildings (services, shops, offices, etc.), and added a requirement that equipment must come from the LEME and use of installers or suppliers from the List of Eligible Installers (LEI) is required.

## **Incentive mechanisms**

### *Type of incentive*

For immediate implementation, direct subsidies, interest rate subsidies (via blended donor-IFI financing) and risk / performance guarantees, could potentially be part of the financing facility. Given that market conditions vary across region, a facility structure is needed that is open and meets needs of various donors and IFIs, perceptions of risk to banks of lending to owners of dwellings is not unusually high, but perceptions of risk to banks of lending to new Home Owner Associations is significant, we recommend a facility providing investment grants **and/or** blended financing (EU or other donors funds at 0% combined with IFI lines of credit) to sub-borrowers depending on local bank or sub-borrower preference. We also propose a risk sharing mechanism for loans to home owner associations

### *Incentive levels*

Appropriate incentive levels should balance costs and benefits so as to target programme objectives that would not otherwise be achieved, and in such a way as to support market behaviours. We considered VAT levels, costs for higher standards, GHG emission reductions, and affordability when determining incentive levels. We did not make use "0% NPV" to determine incentive levels since in most countries, Energy Efficient windows are often the most popular intervention even though they often have the longest payback periods. We conducted market analysis via local real estate experts to gauge the

increased value of homes that had introduced Energy Efficiency measures. In most countries, the increase in property values was between 10-15% - approximately 100 – 150 EUR/m<sup>2</sup>. In Montenegro, the increase was described as up to 200 – 300 EUR/m<sup>2</sup>.

VAT levels are 16-20% in the region. GHG mitigation costs and affordability analysis point to need for higher incentives for apartment buildings. The benefits of individual dwelling renovation are costly and do not justify an incentive. Furthermore they may take attention away from the benefits of building-level renovation. Banks indicated that if a market existed they did not need incentives. Banks were enthusiastic about lending to house-owners if an incentive were given. They were sceptical about lending to HOA. However, since these would be a small portion of the portfolio an incentive to banks just for that may not be necessary.

We have recommended:

- 20% incentives to households
- 30% incentives to HOAs
- No incentives for individual dwellings in apartment buildings
- Optional 1.5% fee to banks, preferably only covering loans to HOAs

#### *Financing needs*

Given the proposed facility size we have calculated the following financing needs for the incentives:

	Year 1	Year 2	Year 3	Year 4	Total
Households	7,020,000	10,800,000	11,880,000	12,600,000	<b>42,300,000</b>
HOA	72,000	828,000	1,800,000	3,132,000	<b>5,832,000</b>

#### **Technical assistance & policy dialogue**

We have proposed barrier removal activities under 3 components:

A: Technical support to banks and installers/suppliers

B: HMC – HOA market facilitation

C: Policy dialogue

Component A focuses on the technical support, principally provided to banks, to ensure the Facility develops and grows quickly, and includes sub-components to establish and maintain technical structure of the facility, build capacity of banks, build capacity of installers / suppliers, market the facility and monitor the facility.

Component B targets Housing Management Companies and lending to Home Owner Associations. For all of the countries in the facility, the market for lending to HOAs does not yet exist in any real sense (though attempts have been made). It is envisioned that the bulk of the technical support will be for establishing standard operating procedures for the banks' introduction of the credit line for both households and buildings, and an in-depth package of support for developing lending products for HOAs. For lending products to HOAs, it should be stressed in its development that lending does not have to take place solely for Energy Saving measures. It is up to the discretion of EBRD whether its credit line could be used for other building-level interventions (such as fixing elevators, plumbing systems, etc.) but given feedback from various banks and HMCs in Serbia, Montenegro, Macedonia, and BiH there is likely to be huge demand for non-Energy Efficiency measures as well. The process for lending to a building for Energy Efficiency measures is very similar to lending for other measures while the market is potentially huge due to most multi-apartment buildings being neglected in the previous decades. Incentives naturally would be limited to the energy saving parts of the lending.

It will also be important to work with Housing Management Companies (and potentially installers/suppliers) who can act as facilitators for connecting HOAs with lending products. Most of the focus should be on developing lending to existing HOAs and not for developing new HOAs themselves. In all

countries with the exception of in Kosovo and Albania, there are already hundreds or thousands of functioning HOAs who could take a loan if they were available and a decision could be made.

Sub-components include market research and community of practice, support to bank product development, and legal and mediation support to HMC / HOA

The Policy Dialogue component C seeks to address the enabling environment through targeted actions to address legislative and regulatory barriers at national, county and municipal levels. Sub-components include work on HOA legal status, payment enforcement, professional management, consensus levels, Consumption based billing for District Heating (BiH, FYR Macedonia & Serbia), Illegal buildings, Inefficient stoves, and development of local incentives via taxation (VAT), utility programmes, and/or municipal Residential ESCOs.

### **Proposal for rolling out the facility**

Two possible approaches have been presented for discussion:

#### *Approach A: Phased rollout in each country of complete facility*

Pilot deployment of the whole facility in Serbia and Montenegro (Credit Lines + technical assistance (components A and B), with Policy Dialogue (component C) in all 6 countries. Scale-up in Macedonia, and then Bosnia and Herzegovina if some of the key legislative barriers can be removed. Eventual deployment in Albania and Kosovo as legislative barriers are removed.

#### *Approach B: Full launch of facility in all countries, with phased HMC-HOA deployment*

Rapid deployment of Credit Lines for houses together with technical assistance (component A) and Policy Dialogue (component C) in all 6 countries. Pilot apartment building lending in Serbia and/or Montenegro with HMC-HOA market facilitation (component B), with scale-up in Macedonia, and then Bosnia and Herzegovina if some of the key legislative barriers can be removed. Eventual deployment in Albania and Kosovo as legislative barriers are removed.

Following discussions, in further iterations of this proposal, we will include the identification of agencies/institutions and synergies to support the implementation of the first activities and identify which banks could participate at which phase.



# 1 Introduction

In this report we have made use of the data gathered in the market overview (task 1), and policy recommendations (task 2), and to develop recommendations for designing an integrated Residential Energy Efficiency Programme. This programme will combine:

- a) a commercial residential energy efficiency financing facility (from the EBRD and other IFIs)
- b) an incentive system to overcome initial market barriers
- c) grants for technical assistance to support creation of the market and
- d) policy dialogue package to support the development of a sustainable residential energy efficiency market after the end of the programme.

The recommendations cover a region-wide programme with concrete proposals for rolling out the facility with an initial focus on selected countries with different level of development.

The report is structured with the following sections:

**Section 2:** An analysis of best EU practices for residential energy efficiency financing and policy that could be successful also in the Western Balkans and of the lessons learned from the EU, that have been taken into account;

**Section 3:** A proposal of the most effective facility structure for the implementation of energy efficiency investments that would cover a broad range of customers including those customers not adequately addressed by local financial institutions but without competing with existing financial instruments; The proposed structure is designed to allow co-financing and cooperation opportunities for International Financial Institutions (IFIs) and donors; An estimate of the overall market size (demand) for residential energy efficiency investments (in terms of financing needs) and an estimate of the size of a credit line facility that could be placed in the market, taking into account affordability issues;

**Section 4:** Proposals for the most appropriate incentive mechanisms required in order to remove barriers and scale up energy efficiency improvements across the residential sector and an estimate of the financing needs and the additional benefits such incentive mechanisms would leverage;

**Section 5:** Recommendations on the technical assistance and policy dialogue package needed to support residential sector and local financial institutions to undertake energy efficiency and/or renewable energy investment projects (including training and capacity building proposals for intermediary banks, implementing agencies such as ESCOs, ministries, regulatory agencies and other stakeholders as appropriate);

**Section 6:** A proposal for rolling out the facility with an initial focus on selected countries with different level of development. The proposal shall also the identification of agencies/institutions to support the implementation of the first sub-projects, proposed selection criteria of buildings, proposals for workshops/communication and an estimated timeline of implementation.

## 2 Analysis of best EU practises for residential energy efficiency financing

In this section we analyse best EU practises for residential energy efficiency financing that could be successful also in the Western Balkans and present lessons learned from the EU that will need to be taken into account.

To set the scene, we begin with overviews of sources of energy efficiency financing, target groups of energy financing, and the different types of financial incentives that are used for energy efficiency in buildings in the EU. This is followed by a selective overview of incentives for energy efficiency in buildings in a number of EU countries. Since in many instances the buildings sector is treated as one, with financing covering both residential and non-residential buildings, in this overview we cover the whole sector but pay particular attention to residential buildings. Lastly, we present some general conclusions about best practices for energy efficiency financing in the residential sector.

### 2.1 Target groups of residential energy efficiency financing

#### 2.1.1 Homeowners

Many EU-funded programmes target homeowners with a variety of incentives (sometimes a combination of incentives) to encourage investments in energy efficiency. While savings at the level of individual houses may be relatively small, the size of this target group is very large.

#### 2.1.2 Cooperatives and owner associations (condominiums)

Many national programmes target groups of owners in various legal forms. While energy efficiency programmes may need to rely on changes in housing and contractual law in order to fully support investment in multi-unit, multi-owner buildings, this share of the residential housing stock is a large potential source of energy savings.

#### 2.1.3 Low-income households

Supporting measures for weatherization and other energy-saving measures in low-income housing were first introduced in the UK in the early 1980s. The programmes provide multiple benefits through increasing energy efficiency, reducing fuels bills and subsidies, and increasing quality of life and comfort.

#### 2.1.4 Municipalities

Municipalities, or local governments, are a common target group for national energy efficiency measures for two reasons. First, they may own and/or manage utilities at the local level. Second, they are frequently responsible for a proportion of the administrative building stock with high energy consumption, such as schools and hospitals. In EU Member States, the share of municipally-owned housing stock is significant.

#### 2.1.5 Commercial real estate developers

Several EU member states with well-developed energy efficiency programmes have targeted commercial real estate developers to promote energy efficient new buildings, through measures such as mandatory high energy performance standards (for instance the 'Passivhaus' standard, and the Code for Sustainable Homes in the UK).

## 2.2 Target building stock

A distinction is often made between the incentives that focus on new constructions and those that focus on the retrofitting of existing buildings. In terms of the former, there is considerable potential for highly-efficient buildings to lock in energy savings for many decades. In contrast, retrofitting the existing housing stock has great potential for energy savings as, on the one hand, the existing building stock is very large compared to new constructions and highly efficient buildings can also enhance dweller's quality of life (particularly in urban, multi-unit buildings that are in need of general repairs).

The range of new and existing buildings that are targeted by energy efficiency interventions include:

- 1) single-family residential buildings;
- 2) multi-unit residential buildings (cooperatives, condominiums, municipal housing, or some combination of the three);
- 3) administrative buildings that are commercially owned;
- 4) administrative buildings that are government owned; and
- 5) institutional buildings, such as schools and hospitals.

In this report, we focus on residential buildings, which we generally assume to be of multi-storey and multi-ownership character, which may be owned and managed privately or publicly, or display mixed ownership-management constellation (e.g. privately owned and publicly managed).

Crucially, appropriate incentive mechanisms for the different building sectors differ considerably; not the least because of the size of the investments that are needed in each case and because of different ownership structures, which shape the ability of building owners to access financing.

## 2.3 Types of financial incentives for energy efficiency

This section provides an overview of the different types of financial incentives for energy efficiency in buildings that exist in the EU. These include:

- Direct subsidies (grant financing)
- Interest rate subsidies (such as blended co-financing)
- Tax deductions, rebates, and waivers
- Reduced VAT rates
- Risk guarantees / performance guarantee
- Energy Performance Contracting (EnPC), possibly with forfeiting
- Utility energy efficiency programmes

Experience from across the EU-27 strongly suggests that different building types benefit from different types of energy efficiency policies and interventions. This is because appropriate incentive mechanisms for different kinds of buildings must take into account existing ownership and management structures, which affect the incentives and ability of building owner's to access financing.

A cross-cutting observation is that where governments have put in place conditions (involving minimum energy efficiency standards) for obtaining, for example, state funding for renewable energy projects, this has led to an increase in investments in energy efficiency measures.

A key conclusion is that high state subsidies (proportionally speaking, in terms of their relative contribution to the overall renovation costs) are not sustainable in the long term; and in fact can have the effect of subsidizing those who can afford to pay in the first place. Governments have been devising alternative, often innovative financial architectures through which critical renovations can be carried out, and even accelerated.

There are numerous examples where IFI and international donor involvement has facilitated investments in energy efficiency in housing (as well as industry and the public sector). The EBRD's own Sustainable

Energy Financing Facilities (SEFFs) are a good example, which have had an important role to play in the region, as for instance in Bulgaria.

The following paragraphs describe in more detail each of the types of financial incentives mentioned above.

### 2.3.1 Direct subsidies (grant financing)

Direct subsidies are provided through grant financing by governments in the EU to groups or individuals, usually in the form of a cash payment to encourage the adoption of more efficient construction measures and/or technologies. These subsidies are very common in EU Member States, where they are seen as a mechanism to overcome the initial cost barriers to adopting energy efficient measures in a wide range of buildings. In non-EU emerging economies direct subsidies are sometimes provided by donors to support economic and social transition.

Advantages of such financing from independent (non-commercial) entities<sup>1</sup>:

- Can result in sustainable transformation of the market
- Can develop specialized products; centralized experience and lessons

Disadvantages:

- May distort the market
- Could create a monopoly
- May not operate efficiently
- Can be captured by political interests.

### 2.3.2 Interest rate subsidies

Interest rate subsidies present another mechanism that is designed to make loans more accessible for energy efficiency projects through, for instance, blended co-financing. In most cases, governments or an international financing institution (IFI) essentially “buys down” the interest rate, paying the difference between the commercial rate and the lower, offered rate in cash. The loan recipient then pays the lower, non-commercial interest rate.

### 2.3.3 Tax deductions, rebates, and waivers and reduced VAT rates

A number of Member State governments employ tax mechanisms that reduce the amount individuals or corporations pay in taxes when they spend money for energy efficiency measures in an existing building or a new highly-efficient building. Deductions refer to cases where some (or all) of the amount paid for energy efficiency measures can be deducted from taxable income. In a rebate, taxes on certain goods are refunded after filing. The most common type of tax incentive related to energy efficiency in buildings in the EU is an income tax deduction. Waivers, in contrast, are applied in cases where an investor building a highly-efficient building is exempt from some or all property tax for a certain period of time as is the case with residential homes in the Flanders region of Belgium. Corporate tax incentives may be provided to compensate investors for additional business costs related to undertaking certain energy-saving measures.

Reduced VAT rates on energy-efficient goods are used to promote the most energy-efficient products on the market in a given category. Lower VAT rates help to offset the higher up-front purchasing costs of more efficient technologies and appliances.

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<sup>1</sup> World Bank Group, Sustainable Development Department (ECSSD), Europe and Central Asia Region (ECA, *Final Report: Western Balkan: Scaling Up Energy Efficiency in Buildings*, 2014

### 2.3.4 Risk guarantees

Guarantees serve as incentives in several ways. Loan guarantees serve as incentives because they reduce the risk of lending for banks, and therefore reduce interest rates for borrowers. They are issued by governments or IFIs to reduce the risk of borrowing money and thus make loans more available in markets with high political or economic risk where conventional banks might not otherwise issue loans. Under a loan guarantee, for example, the government or the IFI will reimburse the lender if the borrower does not re-pay the loan. There are many types of guarantees, but two common kinds are partial risk guarantees (also called partial credit guarantees, usually issued by IFIs), where part of the loan or bond offering is guaranteed, and first-loss guarantees, where the lender assumes the loss if the loan is not repaid. Bond guarantees, improve the rating of the bonds issued. Guarantees are popular incentives because they can be leveraged: i.e. one million Euros invested in a guarantee fund may be able to leverage ten million Euros in investment.

Advantages of risk guarantees:

- Encourage commercial banks to finance energy efficiency
- Help overcome risk perception of banks
- Can lead to sustainable commercial financing

Disadvantages of risk guarantees:

- Require mature banking sector interested in energy efficiency financing
- May need substantial capacity building of banks
- May serve only creditworthy customers.

### 2.3.5 Energy Performance Contracting (EnPC), possibly with forfeiting

Contracting energy efficiency improvements through an Energy Service Company (ESCO) set up is often termed Energy Performance Contracting (EnPC). EnPC is a turnkey service, sometimes compared to design/build/operate construction contracting, and it provides customers with a comprehensive set of energy services including potentially energy efficiency, renewable energy and distributed generation measures on a pay as you use basis. In its simplest form, ESCO contracting is a method by which expected savings on energy bills are used to pay for building renovations. The building owner and an Energy Services Company (ESCO) sign a performance contract that obligates the ESCO to provide a certain level of savings. If the savings fall short of the guarantee, the ESCO must pay the difference.

ESCO EnPC arrangements are attractive to building owners because they do not pay up front for retrofitting measures and because they receive some of the money that is saved due to the retrofit. They are also attractive to ESCOs, because when projects are designed properly, the ESCO will make money through its share of the money saved due to the retrofitting.

ESCO arrangements in the buildings sector are most common in the non-residential buildings sector; i.e. public and commercial buildings, where energy use is high, square meterage large and power systems are in use for set periods all year round with little or predictable variation year by year.

An exception to the rule is with the Lithuanian EnerVizija model where a municipality led ESCO approach is used for residential building renovation. In this model, building renovations are initiated by the municipality, which appoints a project administrator. The consent of homeowners is required, via a simple-majority vote for the renovation investments proposed by municipality. Loans to fund the upgrading are taken centrally, normally by the building administration company from EIB credit lines and repaid through each apartment's monthly building-management fees. The building upgrades are based on standardized packages of Energy Efficiency measures selected on a cost/benefit basis. The procurement of contractors to carry out the renovations may be done by appointed building administrator for groups of buildings sharing a common design or location, thereby taking advantage of economies of

scale. This grouped approach can also facilitate Energy Efficiency improvements in the District Heating system.

EnPC differs from many of the above incentives in that it usually leverages commercial financing, or financing from the private sector, rather than relying on government funds. However, there are also a few ESCOs in operation that are owned in part or in full by government entities.

Forfeiting is often used along with EnPC. Forfeiting is a process by which a bank or other financing institution purchases the 'receivables' (the contracted amount that will be paid to the ESCO over the years of operation) for the services provided to a building owner. This effectively frees the invested capital for further investments in other ESCO contracts; thus making it possible for the same ESCO to engage in several contracts simultaneously, without requiring significantly more capital.

Advantages of EnPC approaches:

- Can be done sustainably
- Build on municipal relationships and services, and can link to welfare system
- May facilitate simple collection (on-bill repayment)

Disadvantages of EnPC energy efficiency approaches:

- Requires supportive legislation, and clear municipal requirements
- Local municipal capacity may be limited
- There is very little track record of the use of EnPC in residential buildings

### 2.3.6 Utility energy efficiency programs

Utilities engage in energy efficiency programs as a result of regulations encouraging or obliging them to do so. In the EU, these regulations are usually in the form of utility Energy Efficiency obligations (EEOs), provisions for which are included in the Energy Efficiency Directive. EEOs typically define energy efficiency targets for energy suppliers, and those suppliers who fail to meet the target must pay a penalty. The costs of Energy Efficiency investments are usually recovered by the utilities through the tariffs paid by consumers. EEOs may be combined with a "white certificate" trading scheme as was, for example, implemented in France (see 2.4.9).

Advantages of utility energy efficiency programmes:

- Can be done sustainably
- Build on utility relationships and services
- Allow for simple collection (on-bill repayment)

Disadvantages of utility energy efficiency programmes:

- Utilities lack incentives to reduce energy sales
- Regulations may limit new utility services and changes to billing
- Can create a monopoly

## 2.4 Overview of incentives for energy efficiency in buildings in selected EU Member States

The selective overview of incentives for energy efficiency in buildings presented in this section provides a sample that covers the most common and relevant kinds of incentives for energy efficiency in buildings. It is important to remember that the area of financial incentives for energy efficiency in buildings is not regulated by a common EU legislative framework. In Article 10 of EPBD2 (2010/31/EU), Member States are urged to introduce financial incentive schemes and are obliged to report to the European Commission on their progress in this respect. However, the mix of incentives and range of the programmes is at the discretion of individual Member States.

While we recognize that market conditions in the EU are very different to those in the Western Balkans – for instance, in terms of construction prices, energy prices and the way that the market functions – European experience is important in that it demonstrates how member states select incentives that reflect the unique conditions in their countries. The main sources of information used in this section are the following<sup>2</sup>:

- Cost Optimality: Discussing methodology and challenges within the recast Energy Performance of Buildings Directive (BPIE, 2010)
- Tax Incentives and Foreign Direct Investment (United Nations, 2000)
- Europe's buildings under the microscope: A country-by-country review of the energy performance of buildings (BPIE, 2011)
- Gross inland consumption of primary energy, 1999-2009 (Eurostat, 2011)
- Statistical books Energy balances (Eurostat, 2010)
- Energy Balances of OECD Countries (IEA 2010)
- Policies and Measures Databases (IEA, 2012)
- National data of the Odyssee Mure project, which monitors energy efficiency trends across Europe<sup>3</sup>

In addition, a broad range of nationally relevant publications were used to compile individual sections.

As is clear from the overview, in many countries incentives for energy efficiency are provided by both national (often federal) governments and local administrations.

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<sup>2</sup> The bulk of the data used in this section comes from reports shared within the World Green Building Council (WGBC) network, the largest international organization influencing the green building marketplace. WGBC is a global not-for-profit organization that promotes greener approaches in the buildings sector. It is made up of nationally active Green Building Council, who carry out the WGBC's work at the national scale, often through generating dialogue between the construction industry and governments.

<sup>3</sup> including Croatia and Norway. Odyssee Mure is coordinated by the French national energy agency (ADEME) and supported under the European Commission's Intelligent Energy Europe Programme.

Table 1 Comparison of incentives in selected EU Member States

Country	Direct subsidy	Loan	Interest rate subsidy	Taxes & VAT
Austria	For thermal retrofitting – up to 30% of costs (usually 10-25%)	Yes	1-4% for 10-20 years	-
Belgium (regional differentiation)	For public buildings, passive house construction	Housing Eco-credit	Yes	Yes, including lower VAT rate for refurbishment and 20% to 40% property tax reduction.
Bulgaria	As part of the EBRD REECL, up to 35% for HOA projects	From EBRD	-	Property tax exemption for 3 – 10 years
Croatia	Subsidy for project preparation and up to 40% grant for multi-owner apartment building projects (60% and 80% in areas of special state concern).	-	-	-
Czech Republic	A range of support schemes			
Denmark	For heating source conversion		-	
Estonia	50% of costs of energy audit	-	-	Interest on loans for Energy Efficiency renovations are tax deductible.
Finland	25% for small, low-income households 20% of costs for heat pumps or shift to pellet/wood-based heating	-	-	First-time home buyers deduct 30% of the amount of interest paid on (amongst other things) Energy Efficiency renovations.
France	White Certificate Scheme results in energy suppliers providing funds for EE.	Yes	1.9% (fixed rate), or 0% for home purchase	Tax credits up to EUR 8,000 for individuals, EUR 16,000 for couples investing in EE. Also there is a reduction of tax on energy renovation from 19.6% to 5.5%
Greece	Up to EUR 15,000 per residence	Yes	Yes	Yes
Ireland	Up to 40%	Bank of Ireland	Yes	
Lithuania	From government and JESSICA at 25%, plus 100% of tech documentation and project management costs.	From EIB	Yes, 3% from JESSICA	-
Netherlands	Energy advice subsidy of EUR 200, and EUR 350 or EUR 750 for improvements	-	-	Lower VAT for thermal insulation
Romania	Thermal rehabilitation – up to 50% from national government and an additional 30% from local governments	5-year	Yes	-
UK	Boiler replacement and ceiling insulation	Green Mortgages	Yes	Reduced stamp duty (tax on land and property). Lower VAT for energy saving materials installed by company



## 2.4.1 Austria

At the federal level in Austria, it is the *National Climate and Energy Funds* (Klima und Energiefonds) that provide €100 million per year for the thermal renovation of residential and commercial buildings until 2014. The money is allocated in the form of direct subsidies of up to 30% of the cost of the measure. Importantly, transfer of the subsidy is conditional upon the production of an energy performance certificate (EPC) before and after renovation. This popular programme is open to individuals and SMEs and has already been oversubscribed twice.

There are financial incentives that are administered at a provincial level, especially for thermal insulation, biomass heating, solar energy for heating and domestic hot water preparation, as well as energy consulting and energy performance certification of buildings. Financial incentives take the form of investment grants (usually 10-25%), or loans (at between 1% and 4% interest for 10-20 years, depending on the region and the mechanism in place). There are complex requirements for eligibility, including in every case the production of an energy performance certificate for the building.

Additionally, energy efficiency requirements are built into the subsidies system for housing construction in Austria (Wohnbauförderung). This system supports the construction of low energy and passive buildings. In 2010, there were more than 8,500 passive buildings in Austria, compared to 25,000 in the EU as a whole.

## 2.4.2 Belgium

The vast majority of relevant programs are administered at the regional level in Belgium. All three regions (Flanders, the Walloon Region, and the Brussels-Capital Region), provide subsidies for retrofitting existing domestic buildings, though the specific terms of the grants, such as eligible costs, vary from region to region. Additional structures are listed below. However, there are a range of federal incentives for energy efficient buildings.

A program providing tax deductions for investments in renewable energies and energy efficiency started in 2003. This federal programme is administered by the Federal Public Service of Belgium (FPS) and covers new buildings and retrofits. Individuals are eligible for tax reductions when undertaking energy efficiency and certain renewable energy projects on their homes. As of January 2005, renters can also apply for energy tax benefits reductions. Eligible improvements include the following: heating systems, thermal retrofits (double glazing, roof/wall/floor insulation, thermostatic valves or regulated thermostats, hot water production, and small-scale renewable energy production (PV, geothermal heat pumps), and energy audits. For the 2008 fiscal year, the tax reduction amounted to 40% of the investment, up to a maximum amount of €2,770 per household, both for new construction and for renovation.

Reduced VAT on home refurbishment was introduced in 2000. The programme covers energy efficiency measures in residential buildings more than 5 years old. Eligible for a reduction in VAT from 21% to 6%, are measures including restoration, transformation, important maintenance, and smaller improvements like painting.

### **Flanders**

Since 2008, new residential buildings with an E-level of E60 shall receive a 20% property tax reduction for a period of 10 years. New residential buildings with an E-level of E40 shall receive a 40% property tax reduction. The E-level is calculated on the basis of energy performance and indoor climate and the number defines the percentage of minimum requirements on energy performance of a building. The lower the E-level, the more efficient is the building. For instance, the E30 level equals the passive house standard with specific energy need for heating of 15 kWh/m<sup>2</sup> per year.

## Wallonia Region

Since 2000, there are a range of subsidies for energy efficiency in buildings in Wallonia:

- the MEBAR programme subsidizes low-income households to improve the energy efficiency of their dwellings;
- the AGEBA programme subsidizes financial audits and investments into energy savings in public buildings; and
- the ECHOP programme supports financially investments in educational buildings and hospitals

The latter two programmes were combined under a new scheme, called UREBA.

Since 2006, grants for the installation of micro-cogeneration systems and high-efficiency wood-burning furnaces and heating boilers have been available to households, enterprises, self-employed workers and private entities. While not an energy efficiency measure strictly speaking, this incentive is relevant in the context of the Energy Performance in Buildings Directive (EPBD) which includes in its calculation methodology for building certificates a value for carbon emissions displaced.

## Brussels-Capital Region

In the Brussels-Capital Region subsidies for Passive House Construction and Low Energy Renovation<sup>4</sup> have existed since 2007, including renovations that result in the building meeting low-energy house standards. For a building of up to 100m<sup>2</sup>, the subsidy is worth up to 100 €/m<sup>2</sup>, and above that, 50 €/m<sup>2</sup>. It can be awarded to individuals or collective housing applicants. Applicants are required to request an on-site visit as a control of the realized measure, and for passive house construction a blower door test (pressure test) is also required, financed by the region. Non-domestic buildings were eligible to benefit from the subsidies from the second half of 2009 onwards, at 50 €/m<sup>2</sup>. As a support measures, the Region has also set up an expert support service targeted at applicants for passive and low-energy house subsidies. The aim of this service is to provide advice and assistance by telephone or e-mail, or face-to-face meetings if desired.

In addition, an annual contest for the design and construction or renovation of buildings meeting strong environmental criteria, including energy use. Since 2007, the 'Exemplary Buildings Contest' awards winning applications with 100 €/m<sup>2</sup> of built area (€90 for the contracting authority and €10 for the design team), to a maximum of €1m. They also benefit from technical support provided by the region to meet their stringent energy and environmental targets. In 2007 and 2008, 76 projects won the competition, totalling over 200,000m<sup>2</sup> of built area. The buildings consume up to 10 times less energy than conventional ones, and are built with environmental-friendly materials. In 2009, €5 million is available to distribute amongst winning applicants.

## 2.4.3 Bulgaria

Buildings put into use before 2005 with classes A and category B of energy performance certificates are exempt from property tax for 3-10 years depending on the class and/or certificate and whether they use renewable energy for the building's energy consumption.

In addition, prospectively until December 2014, the EBRD (with the European Commission, Bulgarian Energy Efficiency Agency) has been running the Residential Energy Efficiency Credit Line (REECL). It consists of a €64 million (up to date) credit facility which provides credit lines to 6 local banks, for the purpose of lending to householders and HOAs to purchase a range of energy efficiency measures (e.g. double-glazing, insulation, building-scale etc.). An additional €14 million in grant financing is provided for REECL borrowers which covers up to 35% of the costs of the project (subject to caps, and obtained

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<sup>4</sup> A passive house consumes a maximum of 15kWh of heating per m<sup>2</sup> per year, while a low-energy house consumes a maximum of 60kWh/m<sup>2</sup>/year.

retrospectively, upon verification of compliance with REECL terms). Importantly, the grant financing is made possible because of the existence of the Kozloduy International Decommissioning Support Fund (KIDSF), which was set up in 2000 for the early nuclear decommissioning of Kozloduy units 1-4 and fuel substitution (contributors are the European Commission, Member States, and Switzerland). Up to date, the programme has supported 50,341 home improvement projects.

#### 2.4.4 Croatia

In Croatia, there have been a variety of mechanisms over the years to encourage energy efficiency in the residential sector. The Government has established a Fund for Environmental Protection and Energy Efficiency which has a variety of mechanisms for funding – including fees on polluters, EU funds, etc. In the past year the Fund has begun co-financing EE improvements in the multi-apartment building sector.

The program includes the following:

- Co-financing of up to 40%, 60%, or 80% of costs for energy audits of buildings with a maximum of 200,000 HRK (~EUR 26,000) per HOA;
- Co-financing of up to 100% of costs for the development of the project plans/documentation with a maximum of 35,000 HRK (~EUR 4,500) per building and a maximum of 200,000 HRK (~EUR 26,000) if a number of buildings apply together;
- Co-financing of up to 40%, 60%, or 80% of costs for EE measures with a maximum of 1.4 million HRK (~EUR 183,000) per building.

Buildings can receive 60% and 80% according to the specific geographic territories they are located in – i.e. if they are counties that are classified as those of special state concern.

In October 2014 the Fund announced the budget for the measures would be increased because of the popularity of the programme (increasing from HRK 20 million to HRK 44 million – EUR 2.6 million to EUR 5.7 million). As of October 2014, 82 buildings had undergone interventions under the programme – resulting in savings of ~3000 tonnes of CO<sub>2</sub> and investments of HRK 34 million in grants (EUR 4.5 million).

#### 2.4.5 Czech Republic

In the Czech Republic, there are a range of support schemes in place for encouraging energy efficient buildings, however the most important one is the “Green to Savings” programme, which opened for applications in April 2009, and is financed from the sale of carbon emission credits under the country’s Green Investment Scheme. Under Czech legislation revenues from the sale of emission credits constitute income for the State Environmental Fund and may be used solely for supporting activities and events aimed at the reduction of greenhouse gas emissions. As such, the Green Investment Scheme (GIS), used to fund the national “Green to Savings” programme, is the largest programme for energy efficiency, targeting in particular the following measures in the residential sector:

- Energy-saving heating measures for residential buildings;
- Complete insulation of the building shell of family houses and apartment buildings leading to the achievement of a low-energy standard;
- Insulation of selected parts of the building shell of family houses and apartment buildings (implementation of a set of measures from offered list);
- Support for construction of passive buildings;
- Support for new passive family houses and apartment buildings;
- Use of renewable sources for heating and for hot water;
- Replacement of coal boilers (local heating units, building-level heating units) with efficient low-emissions sources of biomass and heat pumps with a set minimum average annual heating factor;
- Installation of biomass heating units and heat pumps in new family houses and apartment buildings;

- Installation of solar thermal collectors on residential buildings.

The objective of the program is to support owners of family houses and apartment buildings when implementing the above mentioned measures (with a maximum of CZK 30 million – EUR 1.09 million – per applicant). Eligible applicants are:

- individuals (natural persons);
- associations of owners;
- housing cooperatives;
- cities, towns and municipalities; and
- business entities

Criteria for selecting who receives support were designed in order to fulfil, in particular, the following preconditions:

- effectiveness of the investment in reducing CO<sub>2</sub> emissions (expressed by a greening factor);
- reduction in the consumption of primary energy sources;
- increase in the production of heat from renewable energy sources;
- reduction in pollution from local pollution sources;
- initiation of long-term progressive trends of sustainable housing; replication effect of the support;
- political priorities of the Ministry of the Environment and the Government; and
- adherence to the requirements of the buyers of AAUs (Assigned Amount Units of emissions under the Kyoto Protocol).

The level of the subsidy provided depends on the measure, its magnitude and the type of building (single family or multiple dwelling).

## 2.4.6 Denmark

In Denmark, € 54 million has been earmarked for a subsidy scheme to replace inefficient coal-fired boilers with more energy-efficient heating systems. Qualifying projects include the installation of heat pumps (geothermal or air-water), solar heating in combination with a new boiler, or connection to a district heating system. All types of year-round domestic property are covered. The amount of the subsidy depends on the heating system installed.

Energy audits in Denmark have one of the longest tradition in the Europe. It is a long term information activity used not only for buildings. From the beginning of 1997 the energy auditing schemes for buildings in Denmark were divided into two schemes:

- Energy management in small residential and public buildings and in buildings mainly used for trade and private services (area less than 1500 m<sup>2</sup>);
- Energy management in large buildings (area more than 1500 m<sup>2</sup>), including public and private, residential and service sector (but not the industrial sector).

In Denmark about 10 % of the reports are checked, the procedure includes site visits by the controllers.

## 2.4.7 Estonia

In Estonia, there are several measures targeting energy efficiency in apartment buildings:

- A grant scheme covers 50% of the cost of an energy efficiency audit for apartment buildings (the upper limit of individual grants is € 700).
- In 2010, the country established a green investment scheme with a value of € 30 million funded by the government of Luxembourg. The targets are energy efficiency measures in apartment buildings.

- For private individuals, the interest they pay on loans for energy efficient home renovations can be deducted from their income tax.

## 2.4.8 Finland

*Subsidy for energy efficiency renovations:* Since 2003, Finland has allocated subsidies of up to 15% of investment costs for energy efficiency renovations for existing apartment buildings with a minimum of 3 units. Qualifying measures include more energy efficient windows, insulation, switching to district heating, wood-based boilers, or ground source heat pumps. Each component has a ceiling (e.g. 20 €/m<sup>2</sup> for improving the windows and increasing the building's energy efficiency rating by one class). In order to be eligible for support, apartment buildings must sign a long-term energy saving agreement with the government, which requires systematic improvements in energy efficiency and, among other conditions, annual reporting of results. The budget for the programme was €37 million during 2010.

A 25% state subsidy covering the material costs of renovation is available to small, low-income households. A tax incentive is in place for the domestic deployment of various service providers. First-time home buyers may deduct 30% of the amount of interest paid. Although the incentive does not cover energy efficiency improvements alone, households are encouraged to implement such measures.

*Energy Audit Programme (1992-present):* For non-residential building stock, grants are provided for energy efficiency audits only. In the period 1992-2009, the total amount of financial support provided was €26.5 million (of a total of €60.6 million spent on audits). The private firm Motiva Oy is responsible for the development, marketing and quality assurance of audit activities and for training the auditors.

At the end of 2009, more than 7,300 buildings used for manufacturing and service production have been covered by auditing activities. Annual savings in the service sector and other than process industry were €17 million, or 0.5 TWh, at the end of 2008. Cumulative savings over the same period were €430 million (nearly 12 TWh), and 75 % of this came from industry. Annual savings of process industry have been 0.6 TWh and cumulative 8.5 TWh (1997-2008). Approximately two-thirds of the savings potential identified by energy audits will be realised. The Ministry of Employment and the Economy, established in 2008, continues this work, which was launched by the Ministry of Trade and Industry. Energy audits supported by the Ministry of Employment and the Economy concern the private and public service sectors, industry and the energy industry. The energy auditing of residential blocks of flats, falling under the responsibility of the Ministry of the Environment, was launched in 2003.

As of 1 January 2011, grants are available from the state for 20% of costs for installing a ground source heat and air-to-water heat pump as a building's main heating system or a shift to pellet or wood based heating is subsidised by the Finnish government.

## 2.4.9 France

The national 'Grenelle Building Plan' establishes green finance programmes in the building and real estate sectors, which include the following:

- *Zero-interest 'eco-loans':* consist of preferential loans to cover energy efficiency refurbishment projects. If two measures are undertaken, a 0% loan of €20,000 over 10 years is available. If 3 measures are undertaken, this goes up to €30,000 at 0% interest over 10 years. Over 152,000 preferential loans were granted at the end of 2010, with over 400,000 new loans expected to be allocated by 2013. Green loans for social housing (2009-2020): finance the improvement of energy efficiency in social housing. Plans to renovate the 800,000 social housing units consuming the most energy, and renovate an additional 100,000 in 2009 and 2010 (including energy efficiency measures). Loans amounting to the value of €1.2 were available, with a fixed rate of 1.9% for 15 years available to finance restoration of the first 100,000 units which apply. At

the end of 2010, 65 000 social housing units were refurbished with these green loans, and an extra 50 000 units with common loans.

- *Sustainable development tax credit (2005- present)*: subsidises the installation of equipment which is very energy efficient in both new builds and retrofits. It is targeted at private individuals. A single person can claim up to € 8,000, a couple up to € 16,000. Results: Between 2005 and 2008, more than 4,200,000 dwellings (mainly residential) have applied for support of renovation measures, through this programme.
- *Tax credits for meeting energy efficiency standards in new residential buildings*: are established by the Finance Law of 2009 for the interest paid on loans used to acquire or construct a new home that meets current building code efficiency requirements. This credit is valid for 7 years if the home meets thermal efficiency standards that exceed those currently in place. The rate remains at 40% throughout the 7 years
- *Zero-interest loans for home purchase*: are also established by the Finance Law of 2009 for first time buyers of new or existing buildings). The loan amount increases to € 20,000 if the building meets the French 'Low Energy Consumption Building' standard (the so called BBC "Bâtiment Basse Consommation").
- *Energy Savings Certificates Scheme*: A 'White Certificate Scheme' has been in place since 2006. Each energy supplier has an energy saving obligation corresponding to its market share. When an energy saving measure is implemented for an energy consumer (residential/ commercial/ industry), the supplier receives a white certificate. This is realized also by other countries. The measures are financed by the consumers but the consumers are motivated to realized the energy efficient measures. At the end of the period, if the supplier has not collected enough certificates, they are subject to a financial penalty (0.02 €/kWh). The white certificates may be freely traded.
- *LDD (Livret Développement Durable) (2007-present)*: this is a €10 billion fund for domestic energy conservation projects with low-interest loans. Before it was renamed in 2007, the fund enabled banks to finance the development of SMEs, but now they must use a portion of the funds to provide preferential loans for energy efficiency projects in the residential sector. This portion had to equal 2% in 2008, 5% in 2009, and 10% in 2010. Eligible measures include the following: energy efficient boilers, thermal insulation, thermal regulation equipment, renewable energies, space heating or water heating equipment using wood or other biomass, heat pumps. Applicants must provide the bank with documentation from the equipment installer, certifying it meets required energy efficiency criteria.
- *'Fight against fuel poverty programme' (2011-present)*: is a programme that aims to help 300,000 homeowners refurbishing their homes to reduce energy consumption, and therefore fuel costs. Specific support by local social service providers and a verification check to ensure measures are implemented is provided.

In addition to the above, the government has reduced the tax on energy renovation in existing buildings from 19.6% to 5.5%.

## 2.4.10 Greece

The program "Energy Savings in households" provides for the insulation refurbishment for walls, roofs, windows and the replacement of heating and water heating equipment. The Program offers incentives for the implementation of interventions up to the amount of € 15,000 per residence. In cooperation with the Energy Inspector, the owner agrees on specific interventions necessarily fulfilling the ceiling of expenses so that the budget can be approved. Residences fulfilling the following basic criteria can be financed:

- Located in areas with zone price lower or equal to 2,100 €/m<sup>2</sup>;
- With energy class lower or equal to D, based on the Energy Performance Certificate;
- It has not been marked for demolition.

### 2.4.11 Ireland

Sustainable Energy Ireland (SEI) as Ireland's national energy agency administers the *Home Energy Saving Scheme*. It is a grant scheme that seeks to encourage energy-efficient retrofit investments by homeowners. Fixed grants are available to cover up to 40% of the total cost of the retrofit. Eligible measures include insulation (cavity wall, attic, external wall, internal wall), heating controls, highly-efficient boilers (over 90% efficiency), and energy assessments. The scheme was superseded by the National Retrofit Programme in 2011.

SEI's *Low Income Housing Programme* was set up in 2002 to help establish and implement a national plan of action on fuel poverty in low income homes nation-wide. This scheme aims to improve the energy efficiency and comfort conditions of homes occupied by low income households. The scheme includes attic insulation, draught proofing, lagging jackets, energy efficient lighting, cavity wall insulation and energy advice. Eligible homes are privately owned and rented homes that are identified through their specific conditions (mostly social parameters) of the programme.

### 2.4.12 Lithuania

In 2009, Lithuania established a lending mechanism for residential Energy Efficiency using funds from JESSICA, a financial instrument funded through the European Regional Development Fund (ERDF)<sup>5</sup>. The interest on the loan is fixed at 3%; the standard period of the loan is between 10 and 20 years. The standardized package of measure to be implemented includes window and door replacement, wall and roof insulation, glazing of balconies and heating system balancing valves. The program allows building administrators to take out the loans.

State grant subsidies are available that will cover 15% of upgrading costs. The subsidy is payable on completion of the Energy Efficiency measures and receipt of a Class C or above Energy Performance Certificate. The Climate Change Program (funded by revenues from the sale of carbon credits) is offering an additional 15% + 10% subsidy (until end 2014) for Energy Efficiency upgrade projects that achieve energy savings of 40% or more. TA is also available to cover 100% of technical documentation costs and 100% of project management costs. Supplementary assistance is offered to low-income families.

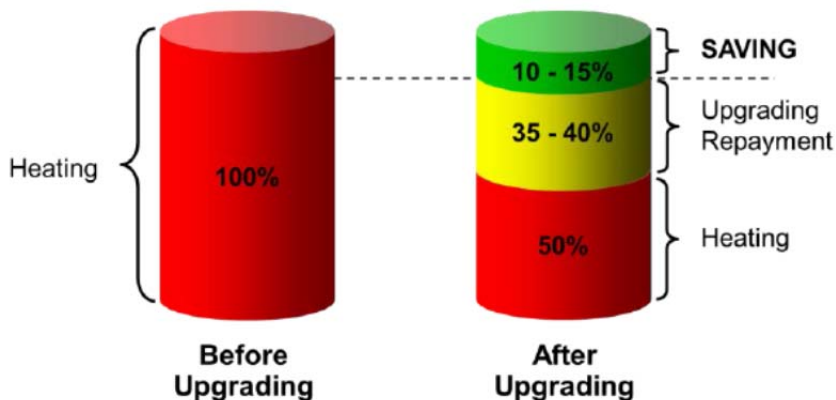
A program called "EnerVizija" was developed to overcome the drawbacks of the previous national program. In addition to using the elements described above, its key features are:

- Building renovations are initiated by the municipality
- Loans are taken centrally, normally by the building administration company, and repaid through each apartment's monthly building-management fees.
- TA by a consultant is provided – in particular for the preparation of technical documentation.
- The building upgrades are based on standardized packages of Energy Efficiency measures. Procurement of contractors may be done for groups of buildings.

The repayment calculation allows for an immediate 10-15% saving by apartment owners after upgrading. The situation before and after upgrading, taking advantage of the ESCO-type model, is illustrated below.

<sup>5</sup> V. Sirvydis, The Residential Energy Efficiency Program in Lithuania, World Bank Group, 2014.

A new alternative, instituted in 2013, was the option to implement city- or district-wide multi-apartment renovation projects.



### 2.4.13 The Netherlands

By the end of 2010, a number of subsidies were available to Dutch homeowners. These include:

- a grant of € 200 for detailed energy performance advice which often includes an Energy performance certificate;
- a subsidy of € 350 or € 750 when improving a home by 2 or 3 energy classes respectively
- VAT reductions for thermal insulation, and larger amount of mortgages when buying a 'green certificate' or 'A class' dwelling.

In addition to the above, there are several specific programmes in place in the Netherlands:

*More with Less (2008-2020):* to overcome financial barriers to energy efficiency investment, the programme aims to secure fixed monthly expenses: energy efficiency investment is offset by the monthly reductions on energy bills (typically are the payments higher than cost reduction; very positive for retired persons). Each project is overseen by a contact person, which can be a contractor, an energy counsellor, an installer, or an architect. They arrange for subsidies, energy labels, offers, and finance. Savings potential is identified and progress monitored through Energy performance certificates. Interventions are carried out in line with the regular renovation cycle i.e. in the case of removal or renovation, when people are more inclined to invest. The initial target of improving energy efficiency of 10,000 buildings has been met.

*Energy-saving subsidy scheme for low-income households (2006-):* € 3.1 million has been allocated to projects helping low income households to save energy. The money goes to consultants and contractors to advise low-income households on energy saving measures and oversee the implementation of the measures. Those who received grants in 2006 were given two years to complete their projects. Eligible works include those on heating systems and introducing simple energy-saving measures such as weather strips, low-energy light bulbs, and water-saving shower heads.

### 2.4.14 Romania

The *National Thermal Rehabilitation Programme* is administered by the Ministry of Regional Development and Tourism in cooperation with local administrations. It is a grant programme aimed specifically at the thermal rehabilitation of residential blocks of flats built between 1950-1990. While 80% of the funding comes from public sources (50% from the central government, up to 30% from local government), the rest should be covered by the final beneficiary (owners' association). The aim is that the revenue of the investment should be 6-8 years, incentive is realized by the government credit guarantee and interest subsidy. Eligible measures include insulation on exterior walls and roofs, replacement of windows and doors, thermal losses of pipes and furniture in basements. After the work is



complete, energy consumption in the building has to be below 100 kWh/m<sup>2</sup>/year. There is no list of accredited products or installers. The programme covers not only thermal rehabilitation measures, but the necessary funds for the energy expertise, audit, feasibility study and design.

In addition, subsidized interest rates are used by the state for thermal rehabilitation of housing blocks. This is an initiative of the Ministry of Regional Development and Tourism to complement the existing grant program for thermal rehabilitation of blocks (described above). It offers alternative funding opportunities for building owners interested to refurbish their buildings. Loans are available for existing domestic buildings only – both individual houses and blocks of flats – to cover thermal rehabilitation of building envelope, replacement of heating installation, integrating renewable energy solutions for thermal energy and electricity. Funding is dependent on the completion of an energy audit. The bank offers credit for 90% of the investment cost. The loan is 5 years long and government-guaranteed, with a maximum of €1,850/room (in case of apartments) and €7,400 for an individual house.

## 2.4.15 United Kingdom

*The Green Deal* is the UK's principal policy instrument for promoting energy efficiency in homes, which enables private firms to offer residential consumers energy efficiency improvements at no upfront cost. The capital cost of the work is covered by a private 'Green Deal Provider' and payment is recouped through a charge on homeowners' energy bills. This allows energy consumers to see the Green Deal charge alongside the savings generated by reduction in energy use. The policy includes a 'Golden Rule' which states that these savings will always be greater than, or equal to, the repayments. This is set so that the consumer sees benefits from the measures. However, it should be noted that the Golden Rule is a hotly debated element of the Green Deal, as it is not clear who is liable to guarantee benefit to the customer, and whether it is in fact always possible to generate positive returns on the investment.

The repayment obligation remains with the meter, and is thus transferring to any new occupier. Consumers are entitled to an independent assessment of the energy performance of their property. Consequent measures will be carried out with accredited equipment and materials. The project is aimed at reducing energy demand, saving consumer's money, and stimulating the retrofit market.

The Green Deal model was supplemented by a new *Energy Company Obligation* from the end of 2012. This will provide grants to cover the cost of energy efficiency measures for low income households and hard to treat properties. This money comes from a levy on energy bills.

*Stamp Duty Relief for Zero Carbon Homes*: To support the move to zero carbon homes, from 1 October 2007 all new homes meeting the so-called 'zero carbon standard' costing up to GBP 500,000 pay no stamp duty (a tax charged on land and property transactions). Zero carbon homes costing in excess of GBP 500,000 are eligible for a reduction in their stamp duty bill of GBP 15,000. However, uptake has been disappointing. As of January 2010, only 24 houses had taken advantage of the rebate. Originally, the definition of 'zero carbon' included all the emissions of a home, however since 2011 the term has been redefined to exclude unregulated electricity; that is electricity used by appliances and cooking.

*Reduced VAT on Energy Saving Materials (2000-)*: Reduction of VAT to 5% as long as the item is installed by an accredited company. Measures cover insulation, draught stripping, hot water and central heating controls, installations of solar panels, wind and water turbines, ground-source and air-source heat pumps, micro-CHP, and wood/straw/similar vegetal matter-fuelled boilers.

*Green Mortgages*: 'Ethical' and 'Green Mortgages' in the UK offer customers an investment which makes certain pledges to offset the carbon footprint of the home. For example, within their eco-mortgage programme the Co-operative Bank makes an annual donation to Climate Care to offset around 20% of the average home's carbon production for every year the mortgage is held. Through this programme new woods are being created in Uganda. It also has requirements for investment opportunities (e.g. avoiding companies which effect "repeated damage to the environment"). With each valuation, the Co-op Bank will provide a free Home Energy Rating, detailing a building's energy efficiency and potential

energy saving measures. Some, like the Ecology Building Society ([www.ecology.co.uk](http://www.ecology.co.uk)), provide mortgages for energy efficient housing, ecological renovation, derelict and dilapidated properties and small-scale and ecological enterprise such as organic farms. These criteria ensure that those who save with it know their funds are being used for ecological benefit. The organization's latest product, the C-Change mortgage discount, is designed to help homeowners with the cost of increasing the energy efficiency of their homes. Any mortgage funds used to install energy saving measures, such as insulation, triple glazing and renewable energy systems - such as solar panels or wind turbines - will benefit from a 1 per cent discount from the standard variable rate.

## 2.5 Conclusions on best practices for residential energy efficiency financing

As has been shown in the preceding sections, EU countries have used a variety of approaches to financing residential energy efficiency, usually combining a number of mechanisms and instruments. This underlines that there is no single right approach to the financing of residential energy efficiency, and that measures have to be assessed within the context of the market they will operate in<sup>6</sup>.

Successful market creation requires a package of measures that remove market barriers by creating an enabling policy environment, providing technical assistance and financing. The three elements must all be adapted to the specific conditions of the country in which the market is to be created and take into account the barriers to financing that exist in that country. It is therefore neither possible nor desirable to make a recommendation on specific financing measures for a group of countries with different market conditions such as the Western Balkans. Hence, in this section we present general best practices for residential energy efficiency financing that will be applicable to the region as a whole.

As part of a broad project on promoting access to private finance for green investments, the OECD recently published a report providing an overview of the main environment-related credit lines extended by IFIs/donor financing institutions and disbursed through local commercial banks in the European Union's Eastern Partnership (EaP) countries<sup>7</sup>. The report concludes with the identification of key drivers of sustainable environmental lending, based on the barriers to achieving such financing that were identified in the report. Due to the similarity in conditions in countries with economies in transition these conclusions are also of interest for the Western Balkan countries.

One of the main challenges the report identifies to the development of lending for energy efficiency investments is the perception of complexity of such lending. This perception stems from the need for local banks wishing to launch such products to adjust numerous processes such as information systems, credit and risk assessment procedures, additional eligibility and appraisal checks, reporting, training, and marketing.

In order to promote the development of self-sustaining markets, demonstrating commercial viability and replicability of investments is key. At a macro-level, the main requirements for this to happen are the development of robust domestic debt markets, and ensuring that the rate and tenor of loans for potential customer segments does not act as a barrier. To achieve these aims, firstly local financial institutions must be persuaded to engage in such lending, followed by the design of a product that can successfully disburse a credit line from an international financial institution.

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<sup>6</sup> Bern Kalkum, *Financing EE Measures in the Residential Building Stock*, presentation given at the 2<sup>nd</sup> Workshop on Energy Efficiency in Buildings held in Vienna on 15-16 May 2014.

A report on financing energy efficiency investments in the Western Balkans that was produced by the Western Balkans Investment Framework (WBIF) identifies way that IFIs could improve their financing packages<sup>8</sup>:

- Make greater use of new banking products and different types of financial intermediaries, such as leasing companies, which will require further work on the legislative and regulatory environment.
- Offer more flexible funding facilities that will:
  - Learn from the experience of large funds, such as JEREMIE and JESSICA, being operated by the EU as loan funds.
  - Match the duration of funding availability with the validity period of the NEEAPs
  - Reduce the complexity and set-up time for funds, while providing the necessary safeguards to manage public funds.

Non-loan facilities are needed for households with inadequate or uncertain income and housing associations in locations in which the legal framework is not adequate to take loans, and majority decision-making is needed.

From the perspective of the local financial institutions, the requirements for a successful product are:

*Design of the product itself and promotion:*

- A financially attractive product with a strong narrative
- A financing model based on the local context and the marketing needs of the bank's clients (for whom environmental benefits may be secondary to financial benefits)
- Initially focused on core business segments of the local bank(s)
- Passing IFI concessionality through to end borrowers

*Integration with institutional strategies*, while remaining separated from the core business activities

*Resources and staffing:* there needs to be upfront investment in staff and procedures. Ideally the product will be supported by a dedicated product manager or team at headquarters and by informed lending officers in regional branches.

*Internal messaging and incentives:* the importance of the lending product should be underlined by messaging from senior management and proper staff incentives. This may be supported by more visibility and reporting of successes of existing funds.

*Effective pipeline development:* First, staff need to be able to recognise eligible activities among their existing customer base, in particular at the SME and household level. For more complex projects, working with clients to develop eligible and bankable project may be necessary, potentially with the support of external consultants who may be funded through technical assistance from the IFI.

*Tools and methods:* Project appraisal may be supported by tools that calculate energy saving, and tools assessing both economic and environmental aspects of the portfolio will be useful for staff reporting.

*Robust appraisal and reporting:* ex-ante and ex-post assessment of energy savings will often require significant donor support.

*Phased product development:* Start with delivering energy efficiency financing to existing clients, after gaining marketing and management capabilities diversify into new business areas.

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<sup>8</sup> Western Balkans Investment Framework (WBIF) Policy and Strategy Discussions, *Financing Energy Efficiency Investment in the Western Balkans*, PM Group, 2013

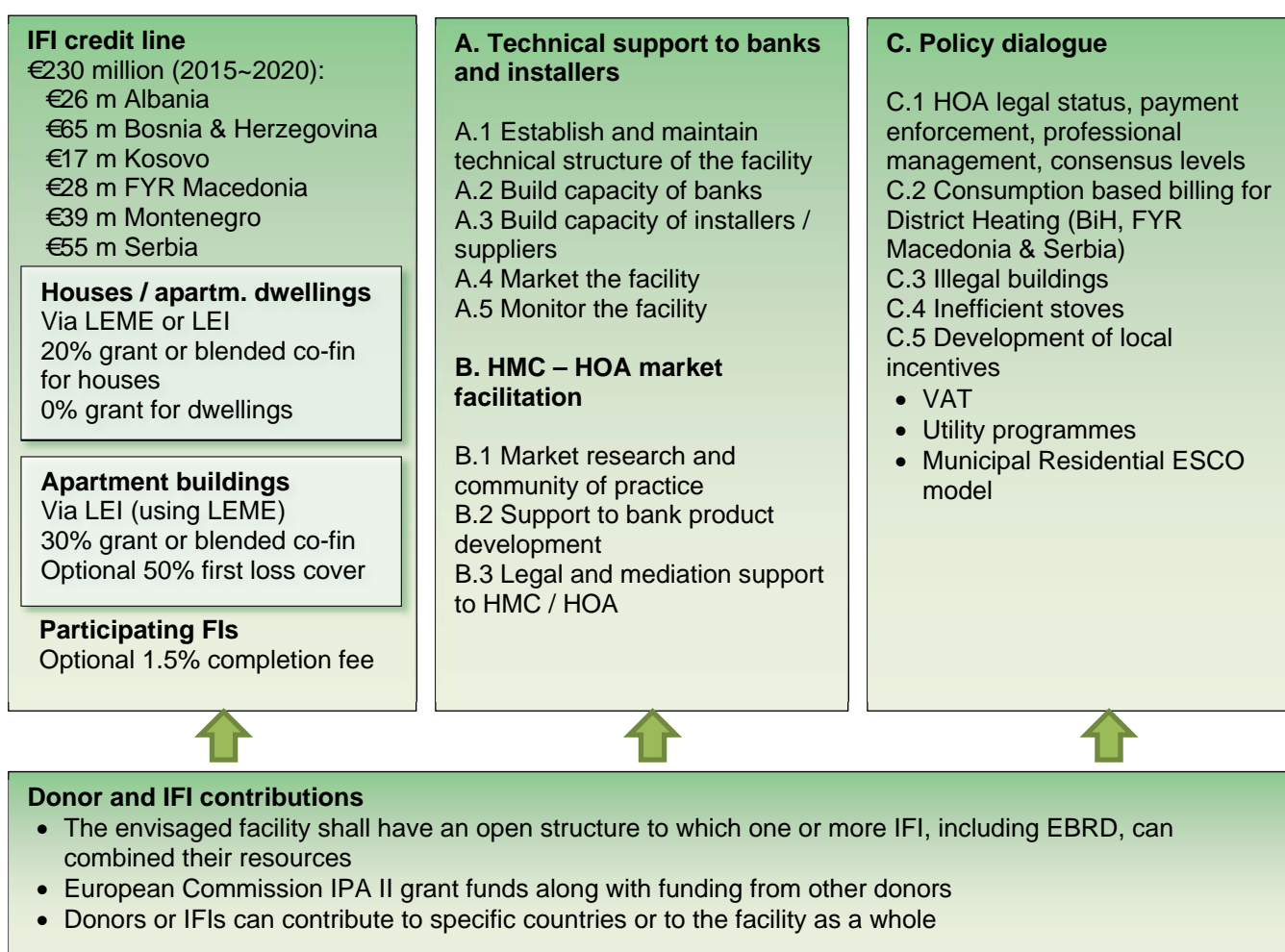
The above factors are all important to ensure local supply of loans. To ensure success of a financing facility, demand for those loans must also be generated. A prerequisite for generating sufficient demand is identifying the type of end-client at which the facility is aimed.

# 3 Proposed overall facility structure

## 3.1 Overview of facility structure

The proposed facility will operate in all six countries of the region, and consist of three main components – 1) credit lines coupled with financial incentives, 2) technical assistance and 3) policy dialogue. The market overview and legislation and policy reviews have shown that there are both many common needs across the region which justify the creation of a regional facility, and differing stages of political and economic development, which argues for a flexible approach which can be adapted to particular needs. The overall structure of the facility is shown in the figure below. The relationship between the three components and deployment timetable will vary within each country. More detail is given in the discussion below.

### Western Balkans Residential Energy Efficiency Financing Facility



## 3.2 Market size and size of credit line facility

Issue	Options
<ul style="list-style-type: none"> <li>Determine the market size and credit line size.</li> </ul>	<ul style="list-style-type: none"> <li>Market size depends on housing and building stock in each country, and economic market potential on affordability considerations. The credit line size is estimated based on existing credit lines in the region.</li> </ul>
Recommendation	Rationale
<p>Economic market size of €23,400 million for houses, €1,600 million and €5,100 million for apartment buildings, offering total energy savings of 79TWh / year and GHG reductions of 20.3 MT/year.</p> <p>Assuming incentive levels given in section 4:            €230 million facility (2015~2020):</p> <ul style="list-style-type: none"> <li>€26 m Albania</li> <li>€65 m Bosnia &amp; Herzegovina</li> <li>€17 m Kosovo</li> <li>€28 m FYR Macedonia</li> <li>€39 m Montenegro</li> <li>€55 m Serbia</li> </ul> <p>Of the total facility, approximately €210 million for individual houses, and €20 million for buildings.</p>	<ul style="list-style-type: none"> <li>There is high demand for loans for households across the region. Based on housing stock, adjusted for houses that do not need renovation, and removing the poorest 20% of households economic potential was estimated. The market size is very large.</li> <li>A 4-5 year facility could have immediate success throughout the region in lending to individual house owners.</li> <li>Lending to HOAs needs legislative development and facilitation. It could start immediately in Serbia, Montenegro, and possibly Macedonia, and then be extended to BiH if some of the key legislative/ procedural barriers can be removed. <b>Kosovo and Albania will require significant legislative reform and implementation.</b></li> </ul>

### 3.2.1 Economic market potential estimate

The economic market potential has been estimated based upon statistical information combined with affordability models developed for various building types and heating types as a part of the preparation of the report.

The estimated size of the credit line facility was estimated using a bottom-up methodology based on estimated based on discussions with local banks and experts, and supplemented with interviews with selected customer segments (apartment owners, home owner associations and housing management companies). Additionally, information gleaned from existing credit lines in various countries (GGF in various countries, IFC in Albania, KfW in Montenegro, EBRD in Kosovo) as well as reported results of subsidized programmes made it possible to estimate the likely size of a credit line facility with or without the proposed incentive mechanisms (see Section 4).

#### ***Economic market potential***

The estimate of market size and market potential has been carried out using the following steps:

**Step 1. Define target customer: this involves customer segmentation and selection.** The types of target customers have been divided according to:

- country,
- type of sub-borrower (houses, apartment dwellings, or multi-apartment buildings), and
- type of heating source.

Most major types of heating sources were analysed and estimates of their prevalence within the market allowed for estimating the total number of potential target customers per heating source and type of sub-borrower as well as the potential impact in terms of energy consumption and GHG emissions avoided.

**Step 2. Estimate the number of target customers and value.** The number of potential target customers was assumed to only include those which had incomes above a certain threshold. While this varied per country, it was estimated that overall 20% of owners of individual houses would be unable to take a loan. However, due to the mixed levels of incomes in multi-apartment buildings, we have assumed that all of these could afford a loan if the remaining issues related to lending to these sub-borrowers were resolved. Table 2 shows the calculated number of sub-borrowers according to type and country.

Table 2: Number Potential sub-borrowers according to market segment

Country	Houses	Dwellings in apartment buildings	Apartment buildings
Albania	317,072	289,633	23,615
BiH	643,132	155,689	27,802
Kosovo	172,159	74,467	16,408
FYR Macedonia	275,612	87,958	9,600
Montenegro	141,328	49,557	3,353
Serbia	1,343,660	445,000	55,689
<b>Total</b>	<b>2,892,962</b>	<b>1,102,304</b>	<b>136,466</b>

**Step 3. Estimate existing penetration rates.** Based on a combination of expert judgement and official statistics, estimates were made of the percentage of buildings which had either already implemented Energy Efficiency measures or were new buildings and therefore would not be interested in taking a loan to improve further. These estimated penetration rates were as follows:

- Albania: 9%
- BiH: 10%
- Kosovo: 7%
- Macedonia: 4%
- Montenegro: 10%
- Serbia 7%

**Step 4. Calculate the potential market volume and value.** The potential market value for investment, energy savings, and GHG emissions reductions for each country is given in the tables below.

Table 3: Estimated economic potential for investment in Energy Efficiency in the residential sector

Country	Unit	Houses	Dwellings in apartment buildings	Apartment buildings	Total (houses + apartment buildings)
Albania	MEUR	2,265	510	1,439	3,703
BiH	MEUR	4,190	288	747	4,937
Kosovo	MEUR	1,367	136	375	1,742
FYR Macedonia	MEUR	2,213	135	421	2,633
Montenegro	MEUR	855	73	195	1,051
Serbia	MEUR	12,526	502	1,959	14,485
<b>Total</b>	<b>MEUR</b>	<b>23,416</b>	<b>1,643</b>	<b>5,135</b>	<b>28,551</b>

Country	Unit	Houses	Dwellings in apartment buildings	Apartment buildings	Total (houses + apartment buildings)
Albania	MEUR	2,265	510	1,439	3,703
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Kosovo	MEUR	1,367	136	375	1,742
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Montenegro	MEUR	855	73	195	1,051
Serbia	MEUR	12,526	502	1,959	14,485
<b>Total</b>	<b>MEUR</b>	<b>23,416</b>	<b>1,643</b>	<b>5,135</b>	<b>28,551</b>

Table 4: Estimated economic potential for energy savings in Energy Efficiency in the residential sector

Country	Unit	Houses	Dwellings in apartment buildings	Apartment buildings	Total (houses + apartment buildings)
Albania	MWh/year	4,468,227	1,011,737	3,080,361	7,548,588
BiH	MWh/year	14,133,902	1,069,282	3,790,794	17,924,696
Kosovo	MWh/year	5,501,967	702,154	2,266,202	7,768,169
FYR Macedonia	MWh/year	4,970,268	426,942	1,125,581	6,095,849
Montenegro	MWh/year	3,538,326	381,243	1,227,114	4,765,440
Serbia	MWh/year	30,440,210	1,288,123	4,377,904	34,818,114
<b>Total</b>	<b>MWh/year</b>	<b>63,052,901</b>	<b>4,879,480</b>	<b>15,867,955</b>	<b>78,920,856</b>

Table 5: Estimated economic potential for energy savings in Energy Efficiency in the residential sector

Country	Unit	Houses	Dwellings in apartment buildings	Apartment buildings	Total (houses + apartment buildings)
Albania	tonnes CO <sub>2</sub> /year	699,431	59,926	505,891	1,205,322
BiH	tonnes CO <sub>2</sub> /year	4,015,665	298,168	965,661	4,981,327
Kosovo	tonnes CO <sub>2</sub> /year	1,315,403	84,854	548,811	1,864,213
FYR Macedonia	tonnes CO <sub>2</sub> /year	888,418	39,097	195,815	1,084,233
Montenegro	tonnes CO <sub>2</sub> /year	239,720	14,324	71,344	311,064
Serbia	tonnes CO <sub>2</sub> /year	9,496,545	225,634	1,383,169	10,879,715
<b>Total</b>	<b>tonnes CO<sub>2</sub>/year</b>	<b>16,655,182</b>	<b>722,001</b>	<b>3,670,692</b>	<b>20,325,874</b>

### 3.2.2 Achievable potential under this facility

The estimation of achievable potential for the facility was based on experience from other similar projects in the region related to lending to individual households and from feedback from some important potential PFIs on their estimated size of potential portfolios.<sup>9</sup> The achievable potential for lending to multi-apartment buildings was necessarily based on expert judgement in terms of expectations of the number of buildings that could be lent to under different scenarios.

Two scenarios were used to determine achievable potential for the facility. Under both scenarios, Technical Assistance would be available to banks and to sub-borrowers, and the key market barriers for lending multi-family apartment buildings would be addressed during the course of the project at differentiated rates. The two scenarios are:

1. A facility that does not have any incentives neither for individual households nor for multi-family apartment buildings.

<sup>9</sup> One major bank in Serbia was very specific and had done market research, suggested that if the facility was 6 M BELIBOR (currently 8.09%) + 2% as the end-cost to the consumer, then they could lend 3 M EUR per year to households.



2. A facility that uses incentives as recommended in Section 4 of 20% grants for certain household loans and 30% for multi-family apartment buildings.

Some of the key experiences related to such credit facilities (either supported with subsidies or not) in the region are listed below as a justification for the estimates.

Table 6: Examples of Energy Efficiency lending and subsidy programmes in the region for which the results were available

Country	Nature of the subsidy	Results in terms of finance placed
Albania	IFC programme: Slightly lower interest rate (~1% less) and technical assistance	~EUR 10 million placed via 2,500 loans, no lending at a building level
Albania	GGF funds slightly lower than market cost for energy efficiency in the residential sector	Reported by banks that lending has been slow due to the added VAT costs.
Bosnia and Herzegovina	Cantonal subsidy programme (30-50% of investment) in Sarajevo, Tuzla, and Zenica of Multi-Apartment Buildings	EUR 1.5 million invested in improving Energy Efficiency of 14 Multi-Apartment buildings
Bosnia and Herzegovina	USAID together with Swiss Caritas were providing partial grants for EE renovation of family houses	Programme attracted a lot of interest from owners resulting in large number of applications.
Bosnia and Herzegovina	Habitat REELIH project (Residential EE for Low Income Households) offers loans for EE improvements with interest rate of 3%, either to HOAs or to vendors and subsidies of up to 70% of the investment cost	Invited 700 buildings in Tuzla canton to apply for the program – and received only 19 applications.
Kosovo	KoSEP programme with a 20% grant for households or buildings implementing Energy Efficiency	306 loans to households / dwellings for EUR 552,000, no loans to building-level projects
FYR Macedonia	USAID/Habitat for Humanity project to assist in Multi-Apartment Building EE measures with grants and TA. Effective interest rate of 0.5% per month. Payment period of 60 months	30 buildings underwent EE improvements
Montenegro	Luxembourg funded interest rate subsidy to 0% for efficient biomass stoves starting in 2013 – Energy Wood programme	EUR 130,000 in interest rate subsidy placed in a few months resulting in 200 modern biomass heating systems installed.
Montenegro	50% subsidy for Multi-Apartment buildings to undergo EE measures financed by the local municipality (Podgorica)	Currently have demand of ~EUR 300,000 for subsidies each year (implying EUR 300,000 of own funds being used for the other part). It was also reported that some HOAs are already taking loans.
Montenegro	Italian Ministry of Environment, Land and Sea funded interest rate subsidy to 0% for 7-year term loans for solar water heating systems in households and businesses	125 solar water heating systems installed – with the current plan to focus more on legal entities in the tourism sector
Montenegro	KfW credit line slightly below market-price for interest rate (priced at 7% to consumers)	EUR 1 million per year lent by one PFI
Montenegro	Lending for home improvement by a Microfinance institution: term of up to 7 years, interest rate from 1.49% to 1.89% per month, fees: 1% to 2%	EUR 730,000 per year lent by the institution. Typically EUR 3,000 per loan
Serbia	Interest rate subsidy driving down	Equivalent of EUR 7 million lent to households in 3

	local currency borrowing to 7% (usually 13-15%)	months.
Serbia	GGF funds slightly lower than market cost for energy efficiency in the residential sector	EUR 1.5 million per year lent by one large bank with an average amount of EUR 3,600 per loan. Others have had more difficulty.

In total, the estimates are as follows:

**Scenario A – with the policy dialogue and TA packages successful, but with no grant mechanism or other subsidy:**

- Lending for households: EUR 50,700,000 over 4 years in all 6 countries
- Lending to HOAs: EUR 5,760,000 over 4 years, with lending focused on Serbia and Montenegro first, then Macedonia, and then BiH if some of the key legislative barriers can be removed.

**Scenario B – with a grant mechanism or other subsidy:**

- Lending for households: EUR 211,500,000 over 4 years
- Lending to HOAs: EUR 19,440,000 over 4 years focused on Serbia and Montenegro first, then Macedonia, and then BiH if some of the key legislative barriers can be removed.

The customer segment covering new residential buildings has not been covered in the present report since, while it requires development of appropriate laws and standards, the need for an energy efficiency credit line may not be justified.

Table 7: Estimated scenario of lending facility – without a subsidy but achieving major technical assistance objectives

Country	Type of sub-borrower	# of PFIs		Year 1	Year 2	Year 3	Year 4	Total credit line
Albania	Households	3	# of loans per bank	100	125	150	150	
			Amount per loan	4,000	4,000	4,000	4,000	
			Total amount per bank	400,000	500,000	600,000	600,000	2,100,000
			<b>Total amount</b>	<b>1,200,000</b>	<b>1,500,000</b>	<b>1,800,000</b>	<b>1,800,000</b>	<b>6,300,000</b>
	HOA		# of loans per bank	-	-	1	2	
			Amount per loan	20,000	20,000	20,000	20,000	
			Total amount per bank	-	-	20,000	40,000	60,000
			<b>Total amount</b>	<b>-</b>	<b>-</b>	<b>60,000</b>	<b>120,000</b>	<b>180,000</b>
BiH	Households	3	# of loans per bank	225	250	300	350	
			Amount per loan	4,000	4,000	4,000	4,000	
			Total amount per bank	900,000	1,000,000	1,200,000	1,400,000	4,500,000
			<b>Total amount</b>	<b>2,700,000</b>	<b>3,000,000</b>	<b>3,600,000</b>	<b>4,200,000</b>	<b>13,500,000</b>
	HOA		# of loans per bank	-	-	5	10	
			Amount per loan	20,000	20,000	20,000	20,000	
			Total amount per bank	-	-	100,000	200,000	300,000
			<b>Total amount</b>	<b>-</b>	<b>-</b>	<b>300,000</b>	<b>600,000</b>	<b>900,000</b>
Kosovo	Households	3	# of loans per bank	100	125	150	150	
			Amount per loan	4,000	4,000	4,000	4,000	
			Total amount per bank	400,000	500,000	600,000	600,000	2,100,000
			<b>Total amount</b>	<b>1,200,000</b>	<b>1,500,000</b>	<b>1,800,000</b>	<b>1,800,000</b>	<b>6,300,000</b>
	HOA		# of loans per bank	-	-	1	2	
			Amount per loan	20,000	20,000	20,000	20,000	
			Total amount per bank	-	-	20,000	40,000	60,000
			<b>Total amount</b>	<b>-</b>	<b>-</b>	<b>60,000</b>	<b>120,000</b>	<b>180,000</b>
FYR Macedonia	Households	3	# of loans per bank	100	125	150	150	
			Amount per loan	4,000	4,000	4,000	4,000	
			Total amount per bank	400,000	500,000	600,000	600,000	2,100,000
			<b>Total amount</b>	<b>1,200,000</b>	<b>1,500,000</b>	<b>1,800,000</b>	<b>1,800,000</b>	<b>6,300,000</b>
	HOA		# of loans per bank	-	1	2	4	
			Amount per loan	20,000	20,000	20,000	20,000	
			Total amount per bank	-	20,000	40,000	80,000	140,000
			<b>Total amount</b>	<b>-</b>	<b>60,000</b>	<b>120,000</b>	<b>240,000</b>	<b>420,000</b>

Country	Type of sub-borrower	# of PFIs		Year 1	Year 2	Year 3	Year 4	Total credit line
Montenegro	Households	3	# of loans per bank	100	125	150	150	
			Amount per loan	4,000	4,000	4,000	4,000	
			Total amount per bank	400,000	500,000	600,000	600,000	2,100,000
			<b>Total amount</b>	<b>1,200,000</b>	<b>1,500,000</b>	<b>1,800,000</b>	<b>1,800,000</b>	<b>6,300,000</b>
	HOA		# of loans per bank	2	4	6	10	
			Amount per loan	20,000	20,000	20,000	20,000	
			Total amount per bank	40,000	80,000	120,000	200,000	440,000
			<b>Total amount</b>	<b>120,000</b>	<b>240,000</b>	<b>360,000</b>	<b>600,000</b>	<b>1,320,000</b>
Serbia	Households	3	# of loans per bank	250	250	250	250	
			Amount per loan	4,000	4,000	4,000	4,000	
			Total amount per bank	1,000,000	1,000,000	1,000,000	1,000,000	4,000,000
			<b>Total amount</b>	<b>3,000,000</b>	<b>3,000,000</b>	<b>3,000,000</b>	<b>3,000,000</b>	<b>12,000,000</b>
	HOA		# of loans per bank	1	10	15	20	
			Amount per loan	20,000	20,000	20,000	20,000	
			Total amount per bank	20,000	200,000	300,000	400,000	920,000
			<b>Total amount</b>	<b>60,000</b>	<b>600,000</b>	<b>900,000</b>	<b>1,200,000</b>	<b>2,760,000</b>
<b>Total</b>	<b>Households</b>			<b>10,500,000</b>	<b>12,000,000</b>	<b>13,800,000</b>	<b>14,400,000</b>	<b>50,700,000</b>
	<b>HOA</b>			<b>180,000</b>	<b>900,000</b>	<b>1,800,000</b>	<b>2,880,000</b>	<b>5,760,000</b>

Table 8: Estimated scenario of lending facility – with a subsidy and achieving major technical assistance objectives

Country	Type of sub-borrower	# of PFIs		Year 1	Year 2	Year 3	Year 4	Total credit line
Albania	Households	3	# of loans per bank	250	300	400	500	
			Amount per loan	6,000	6,000	6,000	6,000	
			Total amount per bank	1,500,000	1,800,000	2,400,000	3,000,000	8,700,000
			<b>Total amount</b>	<b>4,500,000</b>	<b>5,400,000</b>	<b>7,200,000</b>	<b>9,000,000</b>	<b>26,100,000</b>
	HOA		# of loans per bank	-	-	2	4	
			Amount per loan	40,000	40,000	40,000	40,000	
			Total amount per bank	-	-	80,000	160,000	240,000
			<b>Total amount</b>	<b>-</b>	<b>-</b>	<b>240,000</b>	<b>480,000</b>	<b>720,000</b>
BiH	Households	3	# of loans per bank	500	1000	1000	1000	
			Amount per loan	6,000	6,000	6,000	6,000	
			Total amount per bank	3,000,000	6,000,000	6,000,000	6,000,000	21,000,000
			<b>Total amount</b>	<b>9,000,000</b>	<b>18,000,000</b>	<b>18,000,000</b>	<b>18,000,000</b>	<b>63,000,000</b>
	HOA		# of loans per bank	-	-	5	10	
			Amount per loan	40,000	40,000	40,000	40,000	
			Total amount per bank	-	-	200,000	400,000	600,000
			<b>Total amount</b>	<b>-</b>	<b>-</b>	<b>600,000</b>	<b>1,200,000</b>	<b>1,800,000</b>
Kosovo	Households	3	# of loans per bank	150	250	250	250	
			Amount per loan	6,000	6,000	6,000	6,000	
			Total amount per bank	900,000	1,500,000	1,500,000	1,500,000	5,400,000
			<b>Total amount</b>	<b>2,700,000</b>	<b>4,500,000</b>	<b>4,500,000</b>	<b>4,500,000</b>	<b>16,200,000</b>
	HOA		# of loans per bank	-	-	2	4	
			Amount per loan	40,000	40,000	40,000	40,000	
			Total amount per bank	-	-	80,000	160,000	240,000
			<b>Total amount</b>	<b>-</b>	<b>-</b>	<b>240,000</b>	<b>480,000</b>	<b>720,000</b>
FYR Macedonia	Households	3	# of loans per bank	250	300	400	500	
			Amount per loan	6,000	6,000	6,000	6,000	
			Total amount per bank	1,500,000	1,800,000	2,400,000	3,000,000	8,700,000
			<b>Total amount</b>	<b>4,500,000</b>	<b>5,400,000</b>	<b>7,200,000</b>	<b>9,000,000</b>	<b>26,100,000</b>
	HOA		# of loans per bank	-	3	6	9	
			Amount per loan	40,000	40,000	40,000	40,000	
			Total amount per bank	-	120,000	240,000	360,000	720,000
			<b>Total amount</b>	<b>-</b>	<b>120,000</b>	<b>240,000</b>	<b>360,000</b>	<b>720,000</b>

			<b>Total amount</b>	-	<b>360,000</b>	<b>720,000</b>	<b>1,080,000</b>	<b>2,160,000</b>
Montenegro	Households	3	# of loans per bank	300	400	500	500	
			Amount per loan	6,000	6,000	6,000	6,000	
			Total amount per bank	1,800,000	2,400,000	3,000,000	3,000,000	10,200,000
			<b>Total amount</b>	<b>5,400,000</b>	<b>7,200,000</b>	<b>9,000,000</b>	<b>9,000,000</b>	<b>30,600,000</b>
	HOA		# of loans per bank	1	10	20	40	
			Amount per loan	40,000	40,000	40,000	40,000	
			Total amount per bank	40,000	400,000	800,000	1,600,000	<b>2,840,000</b>
<b>Total amount</b>	<b>120,000</b>	<b>1,200,000</b>	<b>2,400,000</b>	<b>4,800,000</b>	<b>8,520,000</b>			
Serbia	Households	3	# of loans per bank	500	750	750	750	
			Amount per loan	6,000	6,000	6,000	6,000	
			Total amount per bank	3,000,000	4,500,000	4,500,000	4,500,000	16,500,000
			<b>Total amount</b>	<b>9,000,000</b>	<b>13,500,000</b>	<b>13,500,000</b>	<b>13,500,000</b>	<b>49,500,000</b>
	HOA		# of loans per bank	1	10	15	20	
			Amount per loan	40,000	40,000	40,000	40,000	
			Total amount per bank	40,000	400,000	600,000	800,000	<b>1,840,000</b>
<b>Total amount</b>	<b>120,000</b>	<b>1,200,000</b>	<b>1,800,000</b>	<b>2,400,000</b>	<b>5,520,000</b>			
<b>Total</b>	<b>Households</b>			<b>35,100,000</b>	<b>54,000,000</b>	<b>59,400,000</b>	<b>63,000,000</b>	<b>211,500,000</b>
	<b>HOA</b>			<b>240,000</b>	<b>2,760,000</b>	<b>6,000,000</b>	<b>10,440,000</b>	<b>19,440,000</b>

### 3.3 Size of sub-loans

Issue	Options
<ul style="list-style-type: none"> <li>• Size of sub-loans given to sub-borrowers should be adjusted to match typical finance needs, and limits</li> </ul>	<ul style="list-style-type: none"> <li>• Various levels could be set, depending on the mix of technologies desired.</li> <li>• Measures selected could include a more basic set of energy saving techniques, or a higher level of technical ambition.</li> </ul>
Recommendation	Rationale
<ul style="list-style-type: none"> <li>• Detached houses: €45,000</li> <li>• Apartments:               <ul style="list-style-type: none"> <li>○ Dwelling: €20,000</li> <li>○ Building: €300,000</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• These are based on costs for advanced measures (including demand and supply side) in reference buildings with average dimensions for each country (roughly 88 m<sup>2</sup> for houses, 65 m<sup>2</sup> for dwellings in apartments, and 990 m<sup>2</sup> for apartment buildings.</li> <li>• The median figures were increased by 2.5 times.</li> </ul>

The size of sub-loans has been estimated based on models for reference houses, apartment dwellings and apartment buildings using market data from each of the countries. The measures considered cover the following:

- Thermal cladding of outer walls
- Thermal insulation of roof
- Energy efficient windows
- Thermostatic valves and hydraulic balancing
- Air to air heat pump or ground to water heat pump
- Efficient boilers / stoves
- Solar Water Heaters

Costs were calculated for a package of demand side measures (walls, windows, roof, and thermostatic valves / balancing), and demand + supply side measures (including all measures listed above where relevant). Using local prices, including VAT<sup>10</sup>, costs for the demand-side measures and full, combined measures have been determined for reference houses and apartments, as given in Annex A.

For detached houses with 88 m<sup>2</sup> heated floor area costs for demand side-measures ranged from €7,000 to €11,000. For dwellings within multi-owner apartment buildings, with average floor areas of 65 m<sup>2</sup> costs for the use of applicable technologies ranged from €2,600 to €4,300. For apartment buildings with 15 dwellings, with a heated floor area of 990 m<sup>2</sup> costs for demand-side measures ranged from €38,000 to €65,000.

For demand and supply side measures, for detached houses costs ranged from €14,000 to €18,000. For dwellings within multi-owner apartment buildings costs ranged from €5,300 to €7,800. For apartment buildings costs ranged from €80,000 to €120,000.

Since floor areas are averages, it is recommended that maximum loan values, assuming that finance up to 100% of the total investment cost be 2.5 times the upper figures. Rounded to the nearest €5,000 the recommended levels are:

- Detached houses: €45,000
- Apartments:

<sup>10</sup> VAT is chargeable on all work and materials in all countries.

- Dwelling: €20,000
- Building: €300,000

## 3.4 Proposed eligibility criteria

In this section we describe the rationale as it applies to particular market segments. For each market segment the discussion includes the definition of eligible sub-borrowers, eligible sub-loans, and eligible sub-projects. The detailed eligibility criteria, as part of the draft policy statement are given in Draft policy statement.

### 3.4.1 Individual houses

#### 3.4.1.1 *Eligible sub-borrowers*

For individual houses it is recommended that sub-borrowers be:

- Individuals or households who are legally registered owners or occupiers of single-family residential buildings.
- Corporate entities that act as aggregators, including Energy Service Companies (“ESCOs”), Suppliers and Installers or any other service companies providing maintenance, operation, construction and refurbishment services upon contractual agreements signed with the building owners/occupants.
- Sub-borrowers must be financially viable and meet the PFI’s credit criteria and be approved in accordance with the PFI’s credit appraisal procedures.

#### 3.4.1.2 *Eligible sub-loans*

For individual houses, it is recommended that individual sub-loans of up to €45,000 per dwelling be available covering all costs necessary for installation and commissioning of equipment, and materials that are included in the List of Eligible Material and Equipment (LEME). Sub-loans should cover up to 100% of the total investment cost (with or without VAT according to the practices of the financial intermediary), and may be given in Euro or local currency. Owners can make use of Eligible Installers, but are not required to.

### 3.4.2 Multi-owner apartment buildings – individual owners

#### 3.4.2.1 *Eligible sub-borrowers*

For the individual owners of apartment dwellings it is recommended that sub-borrowers be:

- Individuals or households who are legally registered owners of dwellings in multi-owner residential buildings.
- Sub-borrowers must be financially viable and meet the PFI’s credit criteria and be approved in accordance with the PFI’s credit appraisal procedures.

#### 3.4.2.2 *Eligible sub-loans*

For dwellings within multi-owner apartment buildings, it is recommended that individual sub-loans of up to €20,000 per dwelling covering all costs necessary for installation and commissioning of equipment, and materials that are included in the List of Eligible Material and Equipment (LEME). Sub-loans can cover up to 100% of the total investment cost (with or without VAT according to the practices of the financial intermediary), and may be given in Euro or local currency.



### 3.4.3 Multi-owner apartment buildings – home owner associations or groups of residents / apartment owners

#### 3.4.3.1 *Eligible sub-borrowers*

For home owner associations or groups of residents / apartment owners it is recommended that sub-borrowers be:

- A group of three or more owners in the same Apartment Building who aim to implement the same type of Eligible Measure.
- Home owner associations that are formally constituted according to the laws of the country (in Serbian/Bosnian/Montenegrin – “skupština stanara”).
- Corporate entities that act as aggregators, including Energy Service Companies (“ESCOs”), Suppliers and Installers or any other service companies providing maintenance, operation, construction and refurbishment services upon contractual agreements signed with the building owners/occupants/home owners association.
- In addition to one of the three potential sub-borrower categories above, owners of commercial premises in the buildings (services, shops, offices, etc.) may be eligible, comprising up to a maximum of 10% of the total renovated floor area, provided the commercial borrowers receive equal treatment to neighbouring residential properties.
- Sub-borrowers must meet the PFI’s credit criteria, subject to and be approved in accordance with the PFI’s credit appraisal procedures.

#### 3.4.3.2 *Eligible sub-loans*

For apartment buildings, it is recommended that individual sub-loans of up to €300,000 per building be used covering all costs for all costs necessary for installation and commissioning of equipment, and materials that are included in the List of Eligible Material and Equipment (LEME), and must make use of installers or suppliers from the List of Eligible Installers (LEI). We have recommended the requirement for approved installers / suppliers for a number of reasons:

1. Most home owner associations and informal groups of owners do not have professional technical knowledge. As identified in the ‘behaviour’ section of the this market demand study, the perceived (and real) complexity of obtaining loans was cited by home owners as a barrier, with a statistical difference between doers and non-doers. Installers, suppliers and other intermediates are a potential way to simplify the process for the sub-borrowers.
2. Quality and value for money considerations are relatively controllable within the context of an individual house where the owner knows exactly what is required, and feels strong ownership for the renovation. For multi-owner buildings this attention is disbursed, and common or inaccessible areas may be overlooked. By building a network of reliable installers the reputational risk for energy savings projects can be somewhat mitigated.
3. To ensure sustainability of the project benefits after the project, it is essential to build the market infrastructure and commercial processes that can support deal flow for banks after then end of the donor supported activities. Suppliers and installers, who can carry out profitable business in this sector promise to be an essential part of this infrastructure.
4. Longer-term mechanisms – including VAT-related incentives, utility programmes, and ESCOs, will require reliable local installers and suppliers – who can, once they have proved themselves potentially become authorized to implement these type of mechanisms.

Sub-loans can cover up to 100% of the total investment cost (with or without VAT according to the practices of the financial intermediary), and may be given in Euro or local currency.

### 3.4.4 Eligible sub-projects

For all sub-borrower types, it is recommended that sub-projects should include a range of equipment and materials that have performance levels equivalent or better than other EU countries with similar climates such as Croatia or Bulgaria. Measures will include:

- Thermal cladding of outer walls, roof and floor
- Energy efficient windows
- Thermostatic valves and hydraulic balancing
- Air to air heat pumps or ground to water heat pumps
- Efficient boilers / stoves
- Solar Water Heaters

More technical detail is given in Annex C below.

## 4 Incentive mechanisms

As has been outlined in section 2, a wide range of incentive mechanisms are used in EU countries to stimulate residential energy efficiency. These mechanisms include:

1. Direct subsidies (grant financing)
2. Interest rate subsidies (such as blended co-financing, with or without an IFI credit line)
3. Risk guarantees / performance guarantee
4. Tax deductions, rebates, and waivers and reduced VAT rates
5. Energy Performance Contracting (EnPC), potentially with forfeiting
6. Utility energy efficiency programmes

Incentives through taxation, Utility programmes, and even potentially EnPCs all require substantial legislative development, but in our view they could be effective in the Western Balkan countries in the right conditions. Efforts to create these conditions could be pursued through the Policy Dialogue component of the financing facility – see section 5 of this report. For immediate implementation, direct subsidies, interest rate subsidies and risk / performance guarantees, could potentially be part of the financing facility. These are discussed below.

### 4.1 Types of incentive that may be applied

Issue	Options
<ul style="list-style-type: none"> <li>• Selection of the most appropriate financial incentive mechanism required to remove barriers and scale up energy efficiency improvements across the residential sector</li> </ul>	<ul style="list-style-type: none"> <li>• Investment grants to sub-borrowers</li> <li>• Risk sharing component with local banks</li> <li>• Blended donor-IFI financing (interest rate subsidy)</li> </ul>
Recommendation	Rationale
<ul style="list-style-type: none"> <li>• A facility providing investment grants OR blended financing (EU or other donors funds at 0% combined with IFI lines of credit) to sub-borrowers depending on local bank or sub-borrower preference</li> <li>• Risk sharing mechanism for loans to home owner associations</li> </ul>	<ul style="list-style-type: none"> <li>• Market conditions vary across region</li> <li>• A facility structure is needed that is open and meets needs of various donors and IFIs</li> <li>• Local banks did not express a strong preference for grants or blended financing</li> <li>• There is a good track record for both grants and blended financing in the region.</li> <li>• Perceptions of risk to banks of lending to owners of dwellings is not unusually high</li> <li>• Perceptions of risk to banks of lending to new Home Owner Associations is significant</li> </ul>

This section of the report reviews options for the most appropriate incentive mechanisms required to remove barriers and scale up energy efficiency improvements across the residential sector (e.g. investment incentives to sub-borrowers and/or a risk sharing component with local banks and/or a blended EU/IFI financing option) and an estimate of the financing needs and the additional benefits such incentive mechanisms would deliver.

While many banks in the region expressed interested in a grant mechanism similar to that frequently used in EBRD SEFFs and its potential application to the residential housing sector, other financial mechanisms were raised by the banks, and other IFIs during interviews. In particular interest was expressed in guarantee mechanism and interest rate subsidies.

For the purposes of this study, the three interventions – grants, guarantees and co-financing – would all combine IFI on-lending to local banks with grant funding from the EU or other donor programmes to create incentives for bank lending and residential borrowing for Energy Efficiency investments. Each of these mechanisms should be measured against sustainability, leveraging capacity, and affordability standards.

The three mechanisms are:

- **Grant funding** from the EU in combination with IFI lending programmes to commercial banks to buy down the costs of Energy Efficiency financing. This is the approach commonly used by the EBRD in their SEFFs and could be administered under the process similar to that currently in place in Kosovo for residential Energy Efficiency projects under KoSEP.
- **Blended co-financing** of IFI lines of credit with EU grant funds to reduce interest rate costs of financing. Under this arrangement local banks would serve as the administrative entity. They would receive grant funds from the EU in conjunction with an IFI credit line. The co-financing level would be matched to local capacity to pay assessments. The EU grant funds would be held in an escrow account and disbursed in conjunction with each loan. In a typical co-financing arrangement the bank would make a loan to a client funded 50% from the IFI credit line at established rates and 50% from the grant fund at below market rates. For purposes of this evaluation, we will assume a 0% interest rate on the EU portion of the loan. The blended rate would fall below market rates and make the Energy Efficiency loan attractive to borrowers. As the loan is repaid, the appropriate portion of repayment would flow to the bank and the escrow account. The escrow account reflows could be used for future blended financing loans and as such is revolving.

To make the co-financing programme more attractive to local banks, the EU loan portion could be subordinated to the IFI credit line portion of the loan. This structure combines a below market interest rate to borrowers and a credit enhancement to banks. This arrangement does not create perverse incentives or a moral hazard as the borrower is simply aware of the below market interest rate and is not aware of the internal subordinated nature of the loan structure.

- **Credit enhancement facilities** in the form of partial credit or performance guarantees (first loss cover) funded with EU grants in combination with IFI credit line programmes to de-risk lending for local banks. Under this arrangement, EU funds would be placed in a reserve account held by a trustee to cover a portion of an IFI credit line loan. Each loan made by a local bank would have a portion of the outstanding principal (commonly 50%) covered by funds in the reserve account. In the event of default, the bank would make a demand on the trustee for the guaranteed portion of the outstanding loan. Under the terms of the guarantee agreement, a portion of the funds could be specifically dedicated for each loan or the EU funds could be deployed on a portfolio basis under a cross collateralization arrangement. The option would be driven by local bank preference.

As each loan is repaid and the outstanding principal declines, funds held in the Trust account to cover a portion of the outstanding principal would be released or de-allocated and available to credit enhance future loans. This makes the guarantee programme revolving. Another factor of the guarantee model is that funds in the reserve account will be invested by the trustee and earn interest. The trustee will be instructed to invest in highly liquid, highly secure instruments and the interest earned will be used to expand the corpus of the reserve account. Based on experience in other countries, a 50% guarantee has not resulted in a reduction of interest rates.

### 4.1.1 Local Financial Considerations

Local circumstances will govern the choice of financial intervention. The selected financial programme however should have elements attractive to both lenders and borrowers.

Grant programmes would be generally more attractive in low income countries where the cost of Energy Efficient investments is high relative to family income. Grant programmes would also have a place in high interest counties where the grant portion effectively lowers the effective monthly debt service payment for borrowers, and are attractive where risk is considered high for this reason. In addition, grant

programmes can stimulate significant interest from borrowers, since receiving upfront cash is perceived as highly desirable.

In countries where interest rates are high and risk is considered low, the co-financing options would be attractive. Here banks are willing to lend but borrowers are reluctant to assume high debt service payment responsibilities. The co-financing at 0% reduces debt service payments to more attractive, manageable levels.

The countries of the Western Balkans can be considered to have low incomes and high interest rates. Risks of lending to owners of individual houses or at the individual dwelling within multi-owner buildings are perceived to be manageable and known, and many multi-purpose loan products (including those geared towards energy efficiency) are available in all the markets. Perceptions of risk for building level loans to home owner associations are very high indeed. These characteristics imply that from the perspective of local financial circumstances incentives via co-financing would be most attractive for individual dwellings, and the grant programme would be most attractive for building level loans.

### ***Bosnia & Herzegovina lending practice***

In Bosnia & Herzegovina, local banks often require homeowners with existing loan obligations to refinance their outstanding loan balance as part of the new loan agreement. This would apply to households with existing consumer loans that seek Energy Efficient financing under attractive IFI programme terms.

The refinancing requirement is designed to prevent the second lender from being in a subordinated position. Without the refinancing provision, the senior lender would have a superior claim while the new lender would have limited recourse if an Energy Efficient loan defaults.

Refinancing may not inhibit Energy Efficient financing under certain circumstances. The Energy Efficient lender would assess the credit quality of the loan applicant against the total loan amount which would include the outstanding principal of an existing loan and the amount to be borrowed for Energy Efficient investments. The combined debt service would be measured against capacity to pay standards. This would take place for any applicant regardless of the intended use of the second loan.

A 20% grant component would mitigate the total loan amount calculation if local banks discount the grant portion from the credit evaluation. A lending programme, however, would be adversely affected if interest rates increase overtime. In this case the borrower would be forced to pay off an existing loan with attractive terms to obtain a new loan with higher interest rates. Depending on the interest rate differential, a 20% grant component may not overcome the disadvantage of higher debt service payments.

While an increase in interest rates would be a general deterrent to new borrowing, the refinancing requirements would make the market even less attractive for Energy Efficient customers.

Under current regional economic conditions and aggressive central bank monetary policy, increases in interest rates are not expected in the near term. While it is not likely that rates will go lower they will certainly move up as the economy and the income of households improve. This would create cross currents in an IFI EE lending market as more households would have greater capacity to borrow at a time when borrowing becomes more expensive.

One approach to deal with this situation would be to reach agreement with the new lending institution to use the grant funding to pay down all or a portion of the carryover debt obligation. In this arrangement, the grant funds would be released directly to the bank with each periodic debt service payment by the borrower. The bank would obtain added security while the borrower would be partially relieved of existing outstanding loan principal. On the other hand, this approach would not ensure that the incentive

### ***Special issue related to FX on-lending in Serbia***

The Serbian banks interviewed for this market study all indicated that a barrier to investment using FX credit lines for EE in the residential sector was that due to banking regulations, for such loans to households, the households were required to either participate with 30% of their own funds for the investment or put down a deposit of 30% of the investment until the loan was repaid. For this reason there is much higher demand for local currency loans. However, it was also noted by the banks that lending for mortgages (or likely specific home improvement measures) would not be subject to this requirement. This needs further investigation with the potential partner banks and any credit line will need to consider this aspect in its structuring.

As mentioned previously, the blended financial programme could contain a credit enhancement feature if EU funds are subordinated. This would make co-financing attractive in high risk, high interest rate environments.

Guarantees would be more effective where banks are concerned about the credit risk of borrowers or are entering a new client/technology market. Guarantees, however, should not be offered to make a bad project a good project. Properly designed financial guarantee programme are based on zero default tolerance levels. Financial guarantees are not like health insurance where it is assumed that a certain percentage of clients will need health cost coverage. Financial guarantee programmes should not compromise good banking practices.

Looking from the perspective of the average mum and dad in the target countries, based on the behavioural study carried out under task 1, perceptions of respondent's as to the likelihood that residents in their building may not be able to repay debts they have made for building renovation were significant (over 70% of respondents indicated "somewhat or very likely"), and perceptions of how serious a problem it would be if residents could not repay debts they have taken to renovate the building very high (over 90% of respondents indicating "somewhat or very serious"). These perceptions are clearly significant barriers. Guarantees address bank perception of risk, not that of the borrower (since borrowers are not aware of the internal subordinated nature of loans), so a grant mechanism is likely to be more effective in addressing this risk than co-financing.

In addition to local circumstances, donor and IFI consideration should also be taken into account in the design of a particular financial strategy. A successful financial programme in each country should therefore blend an appropriate response to local circumstances with donor interest.

#### **4.1.2 Donor considerations**

Donors generally seek to maximize the impact of their funds while simulating desired outcomes. In this reason, each of the proposed mechanisms will be measured against leveraging capacity, sustainability and affordability standards.

For purposes of leveraging capacity, a 10 million Euro grant is applied to the grant, co-finance and guarantee models.

As the chart below indicates, the grant model has the greatest immediate leveraging capacity while the co-financing and guarantee models leverage greater amounts of lending over time. This suggests that the selection of models should be influenced to some extent by absorption capacity.

Where borrower demand and capacity is high and donor funds are readily available the grant model will result in the largest reduction of carbon emissions. Where borrower demand is expected to grow over time based on growing market acceptance and donor funds are limited, the co-financing and guarantee programmes would be preferable and reduce greater amounts of carbon over time.

**Leverage Evaluation**  
**10 Million EU Grant**  
**10 Year EE Finance**  
**Equal annual debt service payments**

20% Co-Finance  
Million Euros

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	TOTAL
<b>EU Loan 0%</b>	10	1	1	1	1	1	1	1	1	1	<b>10</b>
<b>IFI Loan</b>	40	5	5	5	5	5	5	5	5	5	<b>85</b>
<b>Total Annual</b>	50	6	6	6	6	6	6	6	6	6	
<b>Total Cumulative</b>	50	56	62	68	74	80	86	92	98	102	<b>102</b>

20% Grant  
Million Euros

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	TOTAL
<b>EU Grant</b>	10	0	0	0	0	0	0	0	0	0	<b>10</b>
<b>IFI Loan</b>	50	0	0	0	0	0	0	0	0	0	<b>50</b>
<b>Total Cumulative</b>	60	0	0	0	0	0	0	0	0	0	<b>60</b>

50% Guarantee  
Million Euros

	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	TOTAL
<b>EU funds in Guarantee Reserve Account</b>	10	1	1	1	1	1	1	1	1	1	<b>10</b>
<b>IFI Loan</b>	20	2	2	2	2	2	2	2	2	2	<b>20</b>
<b>Total Annual</b>	20	2	2	2	2	2	2	2	2	2	
<b>Total Cumulative</b>	20	22	24	26	28	30	32	34	36	38	<b>38</b>

### 4.1.3 IFI considerations

The use of incentives by IFIs is a complex and somewhat controversial one. In general there is unease about the use of grants with objections around distorting the market and a mismatch between the cost of funding and the risk/return profiles, and inefficient use of resources in the absence of price signals. On the other hand there is recognition that instances of market failure occur and can be addressed through appropriately designed incentives, especially related to first-mover externalities.

It is generally agreed that incentives should address barriers to investment but do not aim to overcome barriers that can be better addressed by other market instruments, policy reforms or by technical assistance. Incentives are justified for various reasons including reducing investor risks related to new markets/technologies, to mitigate lack of suitable financial instruments, to reduce bank/investor perceived risks of lending/borrowing, to overcome affordability concerns, and to demonstrate bankability of projects not considered to be bankable. Where incentives are used they should be designed to avoid or minimise market distortion effects including delaying investment, building dependence on subsidies, the crowding out private finance, and fraud/corruption. It is also generally agreed that incentives should diminish over time as markets provide more of the required signals. In addition, Output-based incentives (paid after verification) are preferable, as are performance-based grant systems, since these are

considered to be least distorting. These factors need to be balanced with the need for an incentive system which is simple to understand and implement.

While the above factors are generally agreed by IFIs (and donors), there are some differences in approach. In particular, EBRD and some other IFIs such as EIB, commonly use direct grants and in general believe that these are less distorting and more likely to reach the ultimate beneficiary (sub-borrower) than blended co-financing. On the other hand IFC very seldom uses grants and strongly prefers the use of concessional finance mechanisms believing these to be less distorting of the market and more sustainable.

#### 4.1.4 Homeowner considerations

The 'behavioural change' surveys and interviews that were carried out with homeowners in each of the countries identified important perspectives from the point of view of residents in multi-owner apartment buildings. These surveys indicated that the lack of clarity and complexity of obtaining loans - at a 95% confidence level, those that did not intend to take a loan (non-doers) were 3 times more likely to mention the need for clear, simple and quick application procedures, and 6 times more likely to mention a lower cost / favourable loan. The two customer-facing incentive approaches both have a positive track record in this regard, with direct incentive grants being more transparent in ensuring that the incentive really reaches the homeowner. For multi-owner apartments, to facilitate transactions, we have recommended the use of a list of approved installers (LEI) – see section 3.4.3 above.

#### 4.1.5 Recommendation

Given the various market conditions across the 6 countries, and the different priorities and approaches of donors and IFIs, we recommend that the overall financing facility be structured in such a way as to allow all three mechanisms – investment incentives to sub-borrowers, a risk sharing component with local banks, and a blended EU-IFI financing option – to be available to contributing donors and IFIs.

### 4.2 Analysis of incentive levels

Issue	Options
<ul style="list-style-type: none"> <li>Incentive levels should be sufficient to address the market barriers, but no more since this would be a waste</li> </ul>	<ul style="list-style-type: none"> <li>Levels of investment grants to sub-borrowers are explored based on the following factors:               <ul style="list-style-type: none"> <li>VAT levels</li> <li>High costs for higher standards</li> <li>GHG emission reductions, and</li> <li>Affordability</li> </ul> </li> </ul>
Recommendation	Rationale
<ul style="list-style-type: none"> <li>20% incentives to owners of individual houses</li> <li>30% incentives to HOAs / groups of borrowers from multi-owner buildings</li> <li>No incentives for individual dwellings in apartment buildings</li> <li>No specific level of incentive for specific technologies</li> <li>Optional 1.5% fee to banks, preferably only covering loans to HOAs</li> </ul>	<ul style="list-style-type: none"> <li>VAT levels are 16-20% in the region</li> <li>GHG mitigation costs and affordability analysis point to need for higher incentives for apartment buildings</li> <li>The benefits of individual dwelling renovation are costly and do not justify an incentive. Furthermore they may take attention away from the benefits of building-level renovation</li> <li>Banks indicated that if a market existed they did not need incentives. Banks were enthusiastic about lending to house-owners if an incentive were given. They were sceptical about lending to HOA. However, since these would be a small portion of the portfolio an incentive to banks just for that may not</li> </ul>



	be necessary.
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Appropriate incentive levels should balance costs and benefits so as to target programme objectives that would not otherwise be achieved, and in such a way as to support market behaviours. The levels of incentives have been determined based on the following factors:

- Renovation and modernization of dwellings and buildings frequently takes place through cash payments, without the payment of VAT. Thus, in the absence of reduced VAT levels for services and materials that deliver desirable energy saving outcomes (which in the long run would be a more sustainable solution – see chapter 5), to encourage the use of loans for renovation, incentive levels need to be at least as high as VAT levels. These are currently:
  - 20% Albania
  - 17% Bosnia and Herzegovina
  - 16% Kosovo
  - 18% FYR Macedonia
  - 19% Montenegro
  - 20% Serbia

In our view, offering an incentive level below the VAT level would mean that sub-borrowers would be more inclined to opt for an off-the-shelf multi-purpose loan that would not bring about the desired transition objectives since there would be no motivation to use energy efficient equipment

- The technologies being promoted through the facility such as windows and insulation, and efficient boilers have higher technical specifications than national standards. These higher quality standards are 10-15% more costly than that required according to national legislation. Other technologies such as heat pumps, solar hot water heating, and PV are not well known on the market and thus attract a premium price.
- Significant benefits come about as a result of the improved efficiency of energy use. These include reduced Greenhouse Gas Emissions than the baseline, and savings in natural resources. The improved efficiency results in improved competitiveness and ultimately contributes to unlocking growth through the encouragement of market supporting behaviours. These important transition objectives justify the use of incentives. An estimation of the avoided external costs has been made for reference buildings for each country and fuel combination, as given in the tables in Annex D. From this analysis we can observe that incentive costs per tonne of GHG emissions mitigated vary widely depending on reference building type and heating fuel. Generally, for individual houses 20% incentives result in costs of around €20 per tonne for electrical heating. For firewood heating on the other hand mitigation costs are excessive (usually well over €100 per tonne). GHG mitigation cost is however not the full story in terms of benefits of addressing households using firewood in low efficiency stoves since they represent a very significant health hazard, and emit black carbon which is a very strong greenhouse gas, although not covered by the Kyoto Protocol.

For individual apartment dwellings, mitigation costs are generally high, with the exception of electricity use in some countries, and the use of coal in BiH. In general the costs for emission reductions are high. This is often because there are limitations to the measures which can be feasibly introduced in an apartment – primarily related to changing windows and heating sources (both of which tend to have longer payback periods than installing insulation, thermostatic valves, etc.)

- The countries of the region have low median incomes with a significant proportion of households paying over 10% of monthly incomes on energy, as shown in Table 9, despite generally subsidized energy costs. This situation underlines the social-economic benefits of incentivizing energy efficiency in housing.

Table 9: Median household incomes and costs of energy

Country	Median income (or expenditure) per month (€)	Weighted average costs for energy / month (€)	Heating costs/ income
Albania	380	70	18%
BiH	346	69	20%
Kosovo	310	99	32%
FYR Macedonia	445	44	10%
Montenegro	619	81	13%
Serbia	470	69	15%

- In the final element of analysis, we have determined affordability models for all reference buildings – houses, apartment dwellings, and apartment buildings – for common heating fuels in each of the countries including electricity, fuel oil, district heating, natural gas, LPG and firewood. These models have been used to calculate two indicators of affordability – the monthly credit payment as a proportion of median income in the country, and the monthly credit less the energy cost savings as a proportion of median incomes. The analysis was run for various levels of incentive from 0 to 50% in steps of 10 percentage points.

Details of the analysis with full results are given in Annex E below. In brief, we can observe the following:

For houses, in most cases when money saved from lower energy bills is not taken into account, monthly repayments exceed 10% of median household incomes for all levels of incentive up to 50%. When energy savings are taken into account, homes heated with electricity, LPG, Pellets are very affordable in some countries (Albania, Montenegro), but for firewood this is not the case, since firewood is relatively cheap. The ratios for credit to median income are particularly high in Kosovo, BiH, FYR Macedonia, and Serbia. A higher level of incentive could be justified in these countries for household loans.

For dwellings, the only measure available is window replacement – **except in cases where wood- or coal-burning stoves could be replaced with more efficient models.** Since the savings are not very high, there isn't much difference between the ratios of monthly credit repayments to median income and credit less energy cost savings to income. On the other hand the NPV of these investments is still negative after 15 years in most cases, while leveraged IRR is positive after 15 years when incentives are 20-30% of the loan. Given the affordability of these small loans, and the poor returns, it could be argued that no incentive should be given.

**For apartment buildings, without taking into account energy cost savings,** monthly repayments would be less than 10% of median monthly incomes at the following incentive levels:

- Albania: 30% except for those using firewood where the stove would need replacing and drive up the cost of investment.
- BiH: over 40%
- Kosovo: over 40% for electricity and over 50% for those using Fuel Oil and Firewood
- FYR Macedonia: Over 40%
- Montenegro: 20% for firewood and 0% always for electricity
- Serbia: 30%

**Taking into account savings, a 30% incentive would mean that loan costs are below 10% of median incomes for all countries analysed.**

- We did not make use of "0% NPV" to determine incentive levels since in most countries, energy efficient windows are often the most popular intervention even though they often have the longest

payback periods – indicating that choices are not based solely upon energy savings and payback periods.

In addition, we conducted market analysis via local real estate experts to gauge the increased value of homes that had introduced Energy Efficiency measures. In most countries, the increase in property values was between 10-15% - approximately 100 – 150 EUR/m<sup>2</sup>. In Montenegro, the increase was described as up to 200 – 300 EUR/m<sup>2</sup>.

- Concerning incentives for banks, our recommendation is based on the interviews in which the majority of respondents indicated that they did not see any need for them as long as they believed business could be done profitably. There was a strong belief that lending to owners of individual houses for energy efficiency, with an interest rate subsidy or grant, would be in great demand. An incentive for banks only when lending to Home Owners Associations could be considered if this were simple to administer.

Based on the above analysis, our recommendation is that an incentive equivalent to 20% of the loan amount be provided to owners of individual houses, 30% incentives to HOAs or groups of owners of multi-owner buildings, and no incentives for individual dwellings in apartment buildings. We do not recommend a higher or lower level of incentive for specific technologies, although caps on certain technologies may be justified. We suggest that an incentive fee is not required for banks although a 1.5% fee could be considered, preferably only covering loans to HOAs. In this analysis we have focused on a flat-rate of incentive to sub-borrowers. An alternative would be to use two rates – a promotional rate for the first year, such as 40% for HOAs, followed by a lower rate, such as 25%. This option may have a stronger promotional effect and make it clear to sub-borrowers that the grant is temporary. We have not yet assessed this option, but it could be included following discussions on the draft report.

## 4.3 Financing needs

Using the market size data from section 3.2, and an incentive of 20% for households and 30% for buildings, via HOA, the financing needs for the incentive as are follows:

		Year 1	Year 2	Year 3	Year 4	Total
Total	Households	35,100,000	54,000,000	59,400,000	63,000,000	<b>211,500,000</b>
	HOA	240,000	2,760,000	6,000,000	10,440,000	<b>19,440,000</b>
Financing needs	Households	7,020,000	10,800,000	11,880,000	12,600,000	<b>42,300,000</b>
	HOA	72,000	828,000	1,800,000	3,132,000	<b>5,832,000</b>

## 5 Technical assistance & policy dialogue

Sections 3 and 4 of the present report address barriers related to affordability and financing. Supporting this, technical assistance and policy dialogue will address these and other market barriers to support the transformation of the residential energy efficiency markets. This chapter thus starts with a review of the barriers before the proposed barrier removal activities are described.

### 5.1 Overview of barriers

The primary barriers to market development can be divided into three main target groups for interventions:

- Sub-borrowers at the house and apartment level;
- Sub-borrowers at the multi-family building level; and
- Participating financial institutions

The barriers related to each group are described below along with activities that should be undertaken to remove these barriers.

It should be noted that an overall barrier to investment is **low energy prices** – particularly for electricity and district heating. While this is a barrier to market development, addressing it may not be within the scope of project activities and therefore should be considered a risk rather than fully elaborated upon as something to be addressed with the policy dialogue.

#### 5.1.1 Sub-borrowers level – houses and apartments

**Limited information about quality installation:** House owners and residents are somewhat familiar with technologies for energy efficiency but not as relates to quality versus non-quality products and installation. They are also generally not aware of which parameters to check, how technologies could be installed, what costs are typical and what benefits are to be expected. It is important however to note that this barrier is not strictly about costs or benefits of energy efficiency. Indeed, it seems that comfort and housing quality is likely to be a larger motivating factor than simply cost/benefit. This is demonstrated for example by the increasing use of pelletized heaters instead of simple firewood heaters (which are less expensive in terms of the equipment and in terms of fuel). It is also noteworthy that by far the most common energy efficiency measure is improved windows – even though this measure often has high payback periods in comparison to other measures. The common person is interested in comfort and convenience in their house as well as the perception that theirs is a “modern” dwelling.

**Prevalence of grey-market implementation leads to less effective outcomes:** Often Energy Efficiency interventions (and construction in general) are carried out without official invoicing or inspections for quality control. This represents a barrier to purpose-loan financing in the sector, but also can mean poor workmanship and poor results. The common person simply finds a construction professional who will do the work and then pays them in cash without any receipts.

**Illegal buildings may not be completed or have people interested in investing:** There are estimated to be hundreds of thousands of illegal dwellings that have been built in the region (prevalent in all countries). Many have not been completed and lack complete facades, have holes between the windows and walls, and are not protected against water damage. This translates to inefficient buildings but the owners may be unlikely to invest due to either cash constraints or anxiousness about the legality of their dwellings.

**Inefficient, polluting wood and coal stoves which are not cost effective to replace after energy efficiency measures and for which improved thermal insulation may pose a health hazard:** Given

the low prices of firewood and coal – which are dominant fuel sources in each country in the region especially for houses – the affordability analyses showed that it is not cost effective to implement energy efficiency measures. On the other hand, it is cost effective to switch to more efficient heating sources (like efficient firewood or coal stoves) but not after energy efficiency measures like better insulation and better windows reduce fuel needs for the dwelling. Furthermore, energy efficiency measures could exacerbate health problems due to indoor pollution (already a problem) being “sealed in” to the dwelling.

**For those using District Heating, lack of ability to realize financial savings:** For apartments (and often houses) on the district heating grids (applicable for BiH, FYR Macedonia, and Serbia), the owners cannot realize financial savings due to lack of metering. Dwelling-level metering within multi-family buildings is practically non-existent.

### 5.1.2 Sub-borrowers level – building-level organizations (HOAs)

It is important to note that the barriers for lending and investment at the building level via HOAs are not only relevant and important for EE. It is also critical for the building stock in general. For this reason, a dual emphasis on building improvement in general – with Energy Efficiency as an important part of this improvement – is likely to yield better results in market creation.

**Lack of fully described legal status of HOAs and inconsistent/non-existent payments:** In all of the countries of the region, there is a legal requirement for buildings to form a Home Owner’s Association and all owners must be a part of this organization. However, the secondary legislation is lacking in most countries and/or is not enforced fully. Specific gaps include:

- Lack of enforced requirement for forming an HOA – in all countries this is an issue. Though there are laws that require this formation, they are not enforced meaning that a large portion of multi-apartment buildings do not have functioning HOAs (over 30% of buildings in most countries). However, there are still thousands of operating HOAs in most countries (Albania and Kosovo are the exceptions);
- Lack of enforced requirement for minimum payments per m<sup>2</sup> (e.g. in all countries, though Montenegro has a legal minimum requirement of 0.20 EUR/m<sup>2</sup> and BiH has requirements as well);
- Lack of sufficiently clear, timely, and effective mechanisms to enforce payment discipline (all countries);
- Over-burdensome requirement of consensus within building owners (75% in Albania, 100% in BiH).

**Lack of professional management:** Related to the issues above, in many places there is a lack of professional management of buildings, meaning that one of the owners is running the affairs of the building either part-time or on a voluntary basis. This can result in a lack of expert knowledge about opportunities/requirements for improvement of the building, as well as friction with regards to collecting payments. This is especially the case in Kosovo and Albania. In the other countries there are often Housing Management Companies heavily involved in the sector, though not close to 100% of buildings utilize them.

**Lack of motivation in making communal decisions:** Even in well-established HOAs, there can be inertia in making communal decisions simply because there is a lack of motivation with respect to communal decisions. Most people consider the apartment to be theirs and the communal spaces to not be their concern.

**For those on District Heating, lack of ability to realize financial savings:** As with the individual dwellings, in BiH and Serbia in some areas with District Heating, the building’s heating bills are not established at the building level but rather based on the m<sup>2</sup> of the building/dwelling. In Macedonia’s only DH system (Skopje), this is an issue at the dwelling level but not at the building level.

**Limited information about costs and benefits:** Building owners do not have readily-available access to information about the financial costs and benefits of investments.

**Perception of risk for building-level borrowing:** Based on interviews with HOA representatives, there is a strong perception of risk for building-level borrowing – believing that inability to pay back a loan will lead to negative consequences. On the other hand HOA representatives which were classified as “doers” within the survey were 11 times more likely to mention the need for residents to be able to act as a legal entity than non-doers. These differences point to a need to address a range of issues related to legal and social relationships between residents, along with simple and efficient loan procedures. Furthermore, advertising messages that convey the message about how clear, streamlined and quick the loan approval processes is, are likely to be influential.

**Varied ability to pay within buildings resulting in resistance to invest:** In most buildings the ability to pay amongst households is varied and poorer households may find it difficult to pay for increased maintenance payments to service loans. This can lead to resistance about making the investment in the first place.

### 5.1.3 Participating financial institutions

**Need for simple and useful data on costs and benefits of investments:** Numerous banks within the region have already undertaken some form of Energy Efficiency investment line for the residential sector. However, standardized and simplified information about the costs and benefits of Energy Efficiency measures would be essential in ensuring quality information is provided to clients. This is particularly the case with building-level investments.

**Lack of experience with financing associations of apartment owners:** While a number of banks actually hold the accounts of HOAs, most have not even considered offering a lending product to them. As such, they will require significant assistance in developing the lending product.

**Need for streamlined investment processes:** The burden of additional paperwork and evaluation of projects must fit reasonably within the existing workload of retail bankers – both for dwelling-level lending and for multi-family buildings.

## 5.2 Proposed barrier removal activities

The proposed barrier removal activities have been structured in 3 components that address the following:

- A: Technical support to banks and installers/suppliers
- B: HMC – HOA market facilitation
- C: Policy dialogue

### 5.2.1 Component A: Technical support to banks and installers/suppliers

This component focuses on the technical support, principally provided to banks, to ensure the Facility develops and grows quickly. It is mainly geared towards technical support for lending to individual households, though many of the issues addressing eligible installers, eligible materials and equipment, energy savings, etc. are also applicable for lending to HOAs.

#### A.1 Establish and maintain technical structure of the facility

*Output:*

Standard information and processes developed for the facility and its PFIs

*Key activities:*

- Check the technical parameters of the Facility, including technologies, eligibility requirements, and criteria for selection, review and maintenance of the List of Eligible Installers (LEI) to keep them aligned with best practice;
- Update the technical parameters of the Facility regularly to ensure that they are clear, unambiguous and ambitious;
- Develop and maintain the List of Eligible Materials and Equipment (LEME) which can be easily understood by both bank retail representatives and by their clients;
- Develop and maintain the List of Eligible Installers (LEI) which can be easily understood by both bank retail representatives and by their clients;
- Develop, update and maintain the standard templates, forms and lists to allow for streamlined investment processes;
- Development of simple models and brochures for banks to present to customers related to Energy Efficiency investments for typical costs of interventions and savings;
- Develop, maintain and update a web-based interactive LEME that enables sub-borrowers and banks to independently search for Eligible Measures,
- Draft an operation manual for personnel of banks involved in the implementation of the Facility;

*Key indicators:*

- Increasing proportion of loan applications via the LEI needing no intervention from the technical consultant

## **A.2 Build capacity of banks**

*Output:*

Banks have the knowledge and capacity integrate the Facility into their lending products, and to develop lending to sub-borrowers, and processing of incentives

*Key activities:*

- Conduct dedicated trainings for the implementation staff of participating financial institutions before the launch of Facility by each institution on procedures and tools
- Upon request of the bank organise and conduct further training workshops at HQ and branch level.

*Key indicators:*

- Self-reported knowledge of PFIs in terms of ability to process loans from the facility

## **A.3 Build capacity of installers / suppliers**

*Output:*

Suppliers and installers have the knowledge and capacity to identify, prepare and deliver the full service to sub-borrowers

*Key activities:*

- Conduct dedicated training to support installers and suppliers to prepare loan applications under the Facility. Training should include procedures and tools, eligibility for the LEI, introductions to banks and banking loan requirements and procedures, new technical developments, health and safety, quality control, and marketing knowledge and skills.

- Prepare guidance for HMCs, local engineers/energy auditors/architects and designers (including on-the-job practical experience) as needed to supplement their existing skills for them to be able to identify and evaluate bankable energy efficiency opportunities

*Key indicators:*

- Increasing proportion of loan applications via the LEI needing no intervention from the technical consultant

## **A.4 Market the facility**

### *A.4.1 Marketing support to banks*

*Output:*

Standard marketing tools developed and specific marketing campaigns supported for PFIs

*Key activities:*

- Support the banks' marketing activities in target regions and enhance their broad implementation;
- In coordination with banks, develop and produce marketing materials (flyers, ad banners, brochures, etc.) to promote the Facility to prospective Sub-borrowers;
- In cooperation with the banks' staff, produce a 'Handbook on Financing Residential Energy Efficiency Investments' for the bank to incorporate in their lending procedures;
- Assistance in involving banks in the policy dialogue aspect related to regulatory reform.

*Key indicators:*

- Self-reporting of PFIs on their level of preparedness for carrying out marketing campaigns for EE

### *A.4.2 Marketing support to installers / suppliers*

*Output:*

Standard marketing tools developed and marketing supported for installers/ suppliers

*Key activities:*

- Develop and produce easily adaptable marketing materials (flyers, ad banners, brochures, etc.) for installers/ suppliers to promote the Facility to prospective Sub-borrowers;
- Training installers/ suppliers on how to assist Sub-borrowers in applying for finance;
- Training installers/ suppliers on the LEME and how to meet the technical requirements to get on the LEI
- Assistance and training as needed to installers/ suppliers for implementation of measures.

*Key indicators:*

- Number of loans facilitated by installers/ suppliers

### *A.4.3 Media and website*

*Output:*

Facility Website and information distribution

*Key activities:*

- Develop the Facility website to provide information about the Facility, the eligibility criteria, procedures, the PFIs, lists of eligible measures, legal advisory tools, downloadable standard forms, templates and other operational tools;



- Prepare a marketing strategy and marketing plans for the Facility and conduct national seminars in each country, one of them at the start-up of the Facility in each country;
- Participation in media events, related workshops by other projects/programmes, etc.

*Key indicators:*

- Functional website tracking the number of hits per month
- Number of key stakeholders receiving information directly about the Facility
- Number of workshops/events where the facility is presented

## **A.5 Monitor the facility**

*Output:*

Project database with Sub-Project information and legal information available

*Key activities:*

- Develop, maintain and update an interactive project database with basic information on each Sub-project and summary on performance of the Facility. Upon request a bank should be able to use the database with access limited to its own pipeline and portfolio of Sub-Projects;
- Develop a legal advisor tool as part of the website, which will provide potential Sub-borrowers with review of basic requirements (e.g. building codes, permit procedures, etc.) needed for implementation of eligible measures.

*Key indicators:*

- Existence of the database which is updated monthly for Sub-Projects and which has up-to-date legal information.

## **Country-specific information**

It should be noted that many of these processes will have already been underway in Kosovo as a part of KoSEP. Additionally, a number of banks will already have standard operating procedures for dealing with similar facilities as there have been residential EE facilities active in all of the countries. These facilities are included in the Policy overview, legal and regulatory review and gap analysis. Before designing a specific set of interventions within PFIs and for specific installers/suppliers, it will be important to gain an in-depth understanding as to the processes/tools they have in place already/ have used already and how they can be adjusted with a minimum amount of intervention.

### **5.2.2 Component B: HOA market facilitation**

This component targets lending to Home Owner Associations. For all of the countries in the facility, the market for lending to HOAs does not yet exist in any real sense (though attempts have been made). It is envisioned that the bulk of the technical support will be for establishing standard operating procedures for the banks' introduction of the credit line for both households and buildings, and an in-depth package of support for developing lending products for HOAs.

For lending products to HOAs, it should be stressed in its development that lending does not have to take place solely for EE measures. It is up to the discretion of EBRD whether its credit line could be used for other building-level interventions (such as fixing elevators, plumbing systems, etc.) but given feedback from various banks and HMCs in Serbia, Montenegro, Macedonia, and BiH there is likely to be huge demand for non-Energy Efficiency measures as well. The process for lending to a building for Energy Efficiency measures is very similar to lending for other measures while the market is potentially huge due to most multi-apartment buildings being neglected in the previous decades.

It will also be important to work with Housing Management Companies and installers/ suppliers who can act as facilitators for connecting HOAs with lending products. Our recommendation for eligibility for multi-owner apartment buildings is that loans must be facilitated by an approved intermediary, and this TC components aims to support that mechanism.

The focus should be on developing lending to existing HOAs and not for developing new HOAs themselves. In all countries with the exception of in Kosovo and Albania, there are already hundreds or thousands of functioning HOAs who could take a loan if they were available and a decision could be made.

## **B.1 Market research and community of practice**

In this market demand study, we have carried out a survey of home owners in multi-owner buildings in a small sample of buildings across the country. The analysis identified drivers for decision-making that have been adopted in the recommendations for the structure of the financing facility. The analysis also identified potential marketing messages, and areas where further analysis would be needed. An example is the low level of knowledge about relevant legislation – across the region a large majority of respondents indicated that they “do not know”; 60% for laws or regulations that make it more likely they will borrow and 76% for laws and regulations making it less likely they will borrow. As pointed out in the analysis, it is unclear whether greater awareness of laws and regulations would unlock positive behaviour, and further investigation could be beneficial to understand the best approach to address the lack of knowledge about laws and rules. In this sub-component, the aim is to build on the knowledge gained from the survey to support the design of effective marketing approaches and messages. The behaviour change framework could usefully be used for this analysis.

Since we have recommended that approved installers (and other intermediaries) be required for lending to HOAs, the analysis should be extended to address perceptions related to the use of such intermediaries.

### *Output:*

Updated market research about how to develop existing HOAs into better functioning ones which would invest

### *Key activities:*

- Carry out market research per country on drivers of change in HOA, potentially using the doer/non-doer survey used in project preparation
- Turn the insights from ground into marketing approaches and messages
- Host quarterly round table on best practices from the region

### *Key indicators:*

- Market analysis existing analysing the key drivers for HOA development as a market segment and information sharing about the results

## **B.2 Support to bank product development**

### *Output:*

Lending products developed within PFIs for lending to HOAs

### *Key activities:*

- Supporting product development for building-level lending be about the building, not necessarily about Energy Saving;
- Demonstrating to senior management the market potential for investment – including demonstrating what similar banks are doing in EU countries;

- Providing technical assistance in developing the product for capital repairs in general and for Energy Efficiency in particular;
- Site visits to places in the region which are culturally similar (notably Croatia, Slovenia, Slovakia, potentially Bulgaria) where such lending is taking place – especially when this lending is being carried out by sister institutions;<sup>11</sup>
- Training for bankers in marketing the product to building representatives;
- Assisting in the liaising with those who can do direct outreach to HOAs (e.g. HMCs and suppliers/installers of technologies);
- Assistance in understanding the legislative and regulatory framework related to lending to HOAs;
- Assist the PFIs at all stages of the process and the HOAs in their applications including technical eligibility checks of sub-project loan applications (when necessary).

*Key indicators:*

- Number of banks offering lending to HOAs
- Number of loans made to HOAs

### **B.3 Legal and mediation support to HOAs**

*Output:*

A system of support in place for providing legal and mediation assistance for HOAs.

*Key activities:*

- Development of a Helpline to answer questions about legal aspects of HOAs and lending/ subsidy programmes;
- Support the municipality in setting up resource centres for information provision on starting/managing an HOA;
- Work with municipalities and HMCs to motivate existing and functioning HOAs to take decisions regarding investments and loans via awareness raising, education activities, and technical analysis of potential investments. This should also include motivating them for non-EE investments which improve the building in general – such as elevator repair, new entrance-door installation, repair of plumbing, etc.;
- For large investments, work with HMCs to support HOAs in identifying their investment requirements through consultations and the preparation of Energy Audits, and/or Rational Energy Utilisation Plans, or Energy Performance Assessments, or Energy Performance Certificates.
- Assist in preparation of building-level projects based on a standard set of requirements for Conceptual Design documentation of each eligible building-level measure;
- Answer information requests and provide technical advice to prospective HOAs;

*Key indicators:*

- Number of HOAs which were provided support
- Number of HOAs making collective investment decisions as a result of the support

### **Country-specific information**

As has already been noted in the barriers section, HOAs and HMCs are somewhat well-developed already in BiH, FYR Macedonia, Montenegro, and Serbia, This is not to imply that they represent 100% of the building stock or that payment discipline is always high, but there are certainly hundreds/ thousands of buildings that collect regular payments via professional third parties (such as HMCs) and

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<sup>11</sup> For example, in Croatia, Intesa San Paolo (Privredna Banka Zagreb) and Erste Bank both offer lending to multi-apartment buildings – and Privredna Banka Zagreb has a line specifically for EE in multi-apartment buildings

which make decisions on investments, contract, etc. These HOAs could be bankable Sub-Borrowers. Each country – and indeed municipality – has a different level of development in this regard, but the market potential is already there.

For Albania and Kosovo, development of HOAs is very much in its nascent stages and thus stimulating the formation of HOAs and HMCs would be necessary.

### 5.2.3 Component C: Policy dialogue

This component will necessarily be specific for each country. Whilst some issues are prevalent in all of the countries analysed (e.g. payment enforcement methods), others are very specific (e.g. level of consensus required for HOAs to make an investment decision). Furthermore, as it was not a part of the study scope, it is not clear what level of interest there is from the Governments (national and sub-national) of specific countries for resolving outstanding policy. For this reason, additional work at the beginning of the Facility may be necessary to fully define the Policy Dialogue interventions which would be achievable within each context. Thus it is envisioned that the technical assistance would be provided via a framework contract with call-offs, tailored to each country.

#### C.1 HOA legal status, payment enforcement, professional management, consensus levels

##### *Output:*

More effective regulatory framework and legal enforcement of housing law related to HOA formation, payments, management, and decision-making.

##### *Key activities:*

- Policy dialogue with each country to establish a proper regulatory system (including secondary legislation) to address multi-family buildings. This will include establishing mechanisms for enforcement via “carrots” and “sticks”<sup>12</sup>
- Consensus levels to be made more consistent with international best practices: (e.g. 75% in Albania, 100% in BiH is too high)
- Improve enforcement of requirement for forming an HOA
- Introduce requirements for minimum payments<sup>13</sup>
- Introduce a sufficiently clear, timely, and effective mechanisms to enforce payment discipline (all countries)
- Introduce a mechanism to assist poor households in covering payment obligations for the improvement (and in some cases ongoing maintenance) of buildings
- Work with municipalities and HMCs to carry out awareness campaigns to encourage – and where necessary require – the engagement of professional building management services<sup>14</sup>

##### *Key indicators:*

- Number of countries with HOA legislation and secondary legislation fulfilling key criteria for lending and investment<sup>15</sup>

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<sup>12</sup> A stick could include setting up a mandatory payment scheme for all apartment owners to be administrated by a municipality. A carrot could include making it so that for HOAs to utilize any Government funded programme, they would have to prove 3 months or more of payment discipline to a combined bank account.

<sup>13</sup> e.g. Montenegro already has a minimum requirement of 0.20 EUR/m<sup>2</sup>.

<sup>14</sup> This could be – for example – requiring that buildings report on their income and expenses every year as well as having an inspection team go to buildings to ensure they meet health and safety requirements. In the event that no reports are submitted and buildings do not meet requirements, a “default” HMC could be assigned to a building to start collecting fees for maintenance and set up a schedule of investments.

<sup>15</sup> These are included in a Table filled out for each country in the Policy Review document. The key criteria are also listed in Annex F.

- Number of functioning, registered HOAs with over 75% payment discipline in each country.

## **C.2 Consumption based billing for District Heating (BiH, FYR Macedonia & Serbia)**

### *Output:*

Consumption based billing at least at the billing level and in some places at the dwelling level

### *Key activities:*

- Develop a detailed list of the District Heating companies, the number of buildings they heat (sorted by residential and commercial), the number of units/dwellings, their heating sources, efficiency levels, Work with municipalities and District Heating companies to reform their billing practices for buildings in places where meters exist but they are not used for billing purposes (Serbia and BiH).
- Partnering with municipalities and District Heating Companies to alter billing practices to utilize meters at least at the building level and ideally with the option of heat allocators within apartments

### *Key indicators:*

- Number of buildings on DH systems that pay according to consumption measured by building-level meters / Number of buildings on DH systems
- Number of dwellings on DH systems that pay according to consumption measured by heat allocators/other measuring device / Number of dwellings on DH systems

## **C.3 Illegal buildings**

### *Output:*

Scheme to address illegal buildings in each country as relates to EE

### *Key activities:*

- Conduct an assessment of the number of illegal residential buildings and their typical energy characteristics
- Develop a series of recommendations for Governments for schemes to address the issue of illegal buildings in a way that yields satisfactory outcomes for the population while addressing planning needs and EE
- Hold regional round-tables on how to address the issue

### *Key indicators:*

- Countries and municipalities with programmes in place to address illegal buildings and their energy inefficiencies

## **C.4 Inefficient stoves**

### *Output:*

Government investment and policy programmes geared towards efficient stove usage for wood and coal stoves

### *Key activities:*

- Conduct an analysis of the market conditions and technical potentials for introducing efficient wood and coal stove designs into the market
- Conduct an analysis of alternative uses for firewood such as in biomass-based DH or electricity producing units, or export

- Work with Governments, counties, and municipalities to develop programmes to address inefficient and unhealthy wood and coal stoves in a way that fosters health, Energy Efficiency and the market for clean heating sources

*Key indicators:*

- Countries and regions with programmes in place to address inefficient stove technologies and their threats to public health/environment

### **C.5 Development of local incentives**

*Output:*

Incentive programmes developed to encourage EE in the residential sector at the national and sub-national level

*Key activities:*

- Assist at the national and sub-national level in developing on-going funding sources for EE improvements<sup>16</sup>
- Assist in developing fiscal policies that will improve the financial attractiveness of EE (e.g. Reduced VAT rate specifically for energy efficiency measures)
- Assist in tariff reform where necessary for specific heating sources (notably electricity and district heating) to reflect actual costs of production – potentially including environmental externalities
- Assist at the national and sub-national level in developing incentive programmes to encourage EE measures and/or building stock renewal (e.g. interest rate subsidies, grant programmes, etc.)
- Assist in developing Utility-run programmes for EE – especially via large electrical utilities and DH companies
- Investigate the option of implementing a Municipal Residential ESCO model

*Key indicators:*

- Number of fiscal policies or incentive programmes put into place at the national level.
- Number of fiscal policies or incentive programmes put into place at the sub-national level.

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<sup>16</sup> An example could be a fund for energy efficiency such as currently operates in Croatia and channels EU donor funds, environmental user fees, etc. into – amongst other programmes – EE measures in the residential sector.

## 6 Rolling out the facility

In this section we present a concrete proposal for rolling out the facility. We are presenting two possible approaches for discussion, following which the preferred approach will be expanded. The approaches may be characterized as follows:

### **Approach A: Phased rollout in each country of complete facility**

Pilot deployment of the whole facility in Serbia and Montenegro (Credit Lines + technical assistance (components A and B), with Policy Dialogue (component C) in all 6 countries. Scale-up in Macedonia, and then Bosnia and Herzegovina if some of the key legislative barriers can be removed. Eventual deployment in Albania and Kosovo as legislative barriers are removed.

*Rationale:* lessons can be learnt from each country before deployment in the next country. However, EBRD already has knowledge and experience from Kosovo, and other IFIs from other countries, and lending to owners of individual houses could be deployed now in all 6 countries.

### **Approach B: Full launch of facility in all countries, with phased HMC-HOA deployment**

Rapid deployment of Credit Lines for houses together with technical assistance (component A) and Policy Dialogue (component C) in all 6 countries. Pilot apartment building lending in Serbia and/or Montenegro with HMC-HOA market facilitation (component B), with scale-up in Macedonia, and then Bosnia and Herzegovina if some of the key legislative barriers can be removed. Eventual deployment in Albania and Kosovo as legislative barriers are removed.

*Rationale:* Since EBRD and other IFIs have experience in lending to the housing sector in Kosovo and other countries, and there appears to be demand in all 6 countries, credit lines targeting owners of houses could be deployed as soon as banks are ready to sign up to them. The HMC-HOA market however requires learning and considerable initial effort, and in some cases, like in Bosnia and Herzegovina, changes in secondary legislation are essential, before lending to the HOA market will be possible, so this component could be gradually deployed.

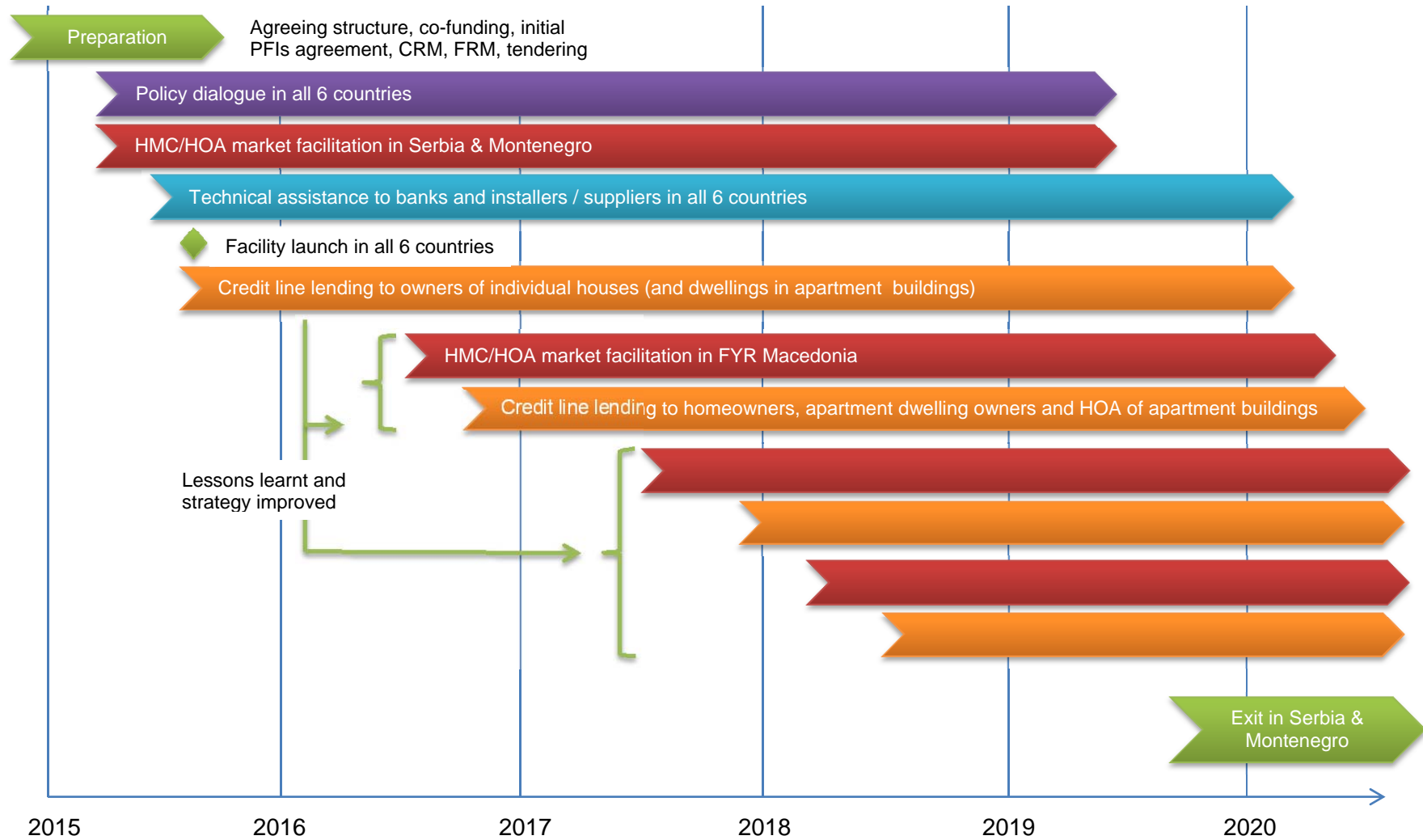
The proposal for rolling out the facility under these two approaches is shown diagrammatically below.

### **Potential areas for synergies with existing programmes:**

A number of countries are already implementing/have implemented programmes for encouraging EE which could be linked directly with the facility. These are described in detail in the Task 2 report. These include, for example:

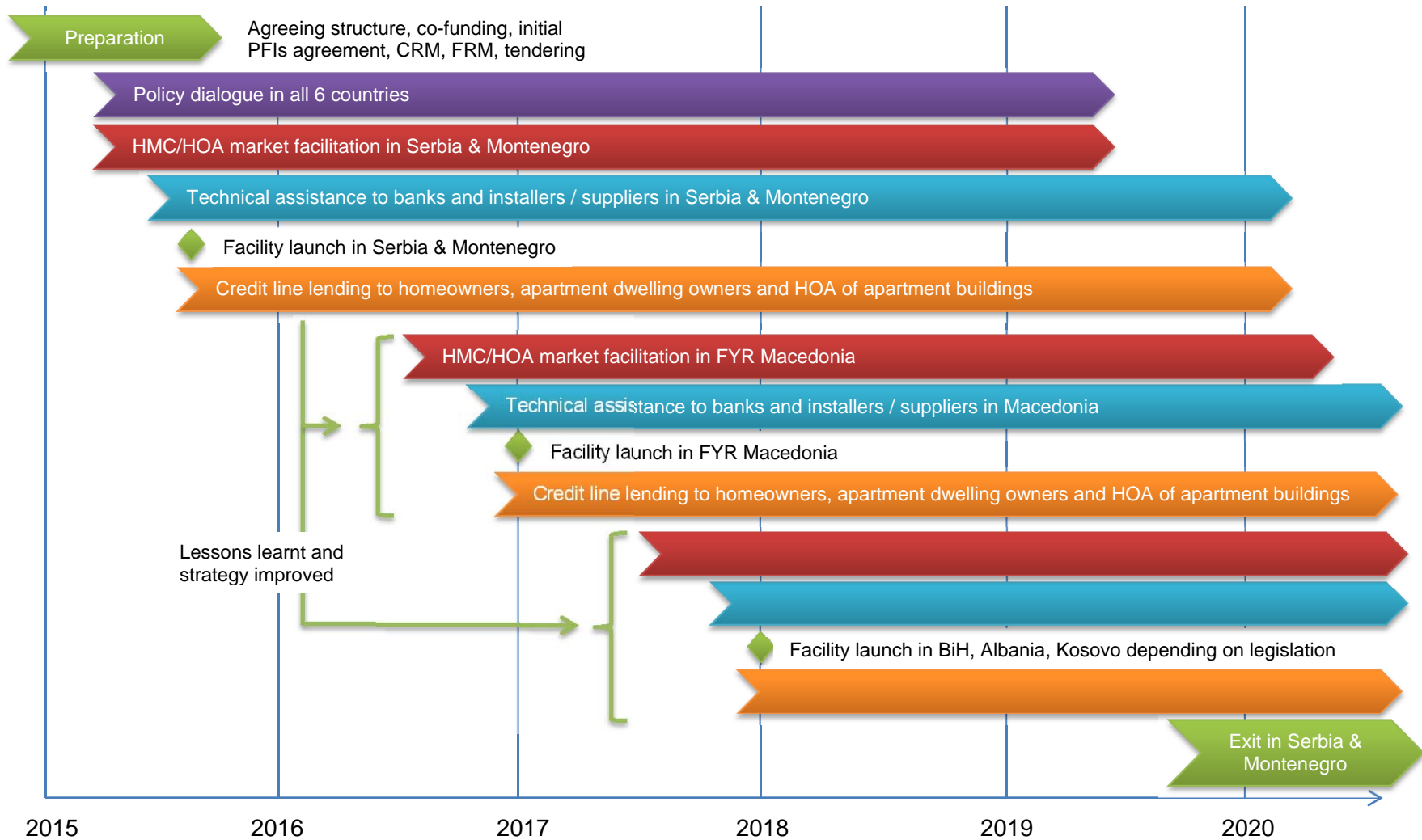
- Sustainable biomass initiatives for the residential sector in Montenegro and Serbia;
- The Nationally Appropriate Mitigation Action (NAMA): "Introduction of metering system and billing on the basis of measured consumption in district heating systems in Serbia" by Beogradske Elektrane;
- The NAMA: Improvement of Old Residential Buildings Envelopes (Exterior doors, windows and thermal insulation) in Serbia by the Ministry of Construction and Urban Planning;
- A programme for subsidizing EE measures in multi-apartment buildings in Podgorica, Montenegro.
- A programme for subsidizing EE measures in multi-apartment buildings in various Cantons in FBiH (including Sarajevo).

### Approach A: Phased rollout in each country of complete facility





**Approach B: Full launch of facility in all countries, with phased HMC-HOA deployment**



Following discussions, in further iterations of this proposal, we will include the identification of agencies/institutions and synergies to support the implementation of the first activities and identify which banks could participate at which phase.

# Annex A. Refurbishment costs

Costs were determined for a selection of reference building using market prices in each of the six countries. The measures considered were:

## Basic refurbishment (demand side measures)

- Thermal cladding of outer walls
- Thermal insulation of roof
- Energy efficient windows
- Thermostatic valves and hydraulic balancing
- Efficient boilers / stoves (for those heating with inefficient coal / wood)

## Full refurbishment (demand and supply side measures)

- All demand side measures plus
- Air to air heat pump or ground to water heat pump
  - Efficient boilers / stoves
  - Solar Water Heating

Country / reference building	Heated floor area (m <sup>2</sup> )	Basic (€)	Full (€)
<b>Albania</b>			
Family house	90	7,100	15,000
Apartment dwelling	65	2,600	5,300
Apartment building	970	38,000	80,000
<b>Bosnia &amp; Herzegovina</b>			
Family house	90	9,100	16,000
Apartment dwelling	65	3,600	6,000
Apartment building	970	53,000	90,000
<b>Kosovo</b>			
Family house	95	7,000	14,000
Apartment dwelling	70	2,600	6,400
Apartment building	1,070	39,000	96,000
<b>FYR Macedonia</b>			
Family house	90	11,000	18,500
Apartment dwelling	65	4,300	7,800
Apartment building	970	65,000	120,000
<b>Montenegro</b>			
Family house	90	6,800	15,000
Apartment dwelling	65	2,800	6,200
Apartment building	970	42,000	93,000
<b>Serbia</b>			
Family house	70	7,300	14,000
Apartment dwelling	65	2,700	5,500
Apartment building	970	40,000	82,000
<b>Regional average</b>			
Family house	88	8,050	15,417
Apartment dwelling	66	3,100	6,200
Apartment building	987	46,167	93,500

# Annex B. Regional bank projections regarding the potential size and deployment timeframe

Banks interviewed in the region were generally unwilling to provide projections of EE investment potential and a timeframe for deployment.

They indicated that the program design would have a great influence on bank participation and projected lending levels. And, that the timeframe for deployment would be similarly dependent on program design and EBRD implementation process.

Most banks did however express an interest in new products and class of clients. This reflects that fact that banks in the region are relatively cash rich/highly liquid.

As chart X below indicates, commercial bank deposits have grown substantially over the last several years as a percentage of GDP.

Table 10: Outstanding Commercial Bank Deposits as % of GDP

Country	2004	2007	2010	2013
Albania	48%	63%	64%	71%
Bosnia	27%	38%	40%	46%
Kosovo	23%	33%	44%	48%
Macedonia	30%	43%	49%	56%
Montenegro	10%	41%	38%	45%
Serbia	18%	34%	41%	47%

Source: IMF Financial Access Study (FAS) 10/10/2014

Some banks expressed concerns about entering into detailed discussions and program design work for EE lending due to past efforts with other IFIs that proved not to be successful or profitable for them. Particular mention was made of programs with extensive reporting and verification requirements. The potential size of the regional EBRD program would also depend on the attractiveness of the program to banks and their clients.

Key issue to banks and their clients included the following:

- Level and nature of subsidies
- Simplicity of the loan process and approval
- Verification and reporting requirements
- Technical assistance available to banks for assessing EE loans
- Commitment to marketing the benefits of EE loans to clients

Banks that were aware or made aware of the existing EBRD 20% grant program were very interested in moving forward in discussions with EBRD.

The credit quality of potential clients was also an issue to banks. Residential EE loans, if based on collateralized lending, would be a highly attractive market while uniform concern was expressed about lending to housing associations.

# **Annex C. Draft policy statement**

See separate attachment.

## Annex D. GHG incentive cost

The calculation of incentive cost per tonne of lifetime emission savings for each country is given in the tables below, first for demand-side measures, and then for demand and supply side measures. Equipment lifetimes of 20 years have been used.

### D.1 Demand-side measures

Country / reference building	Cost of demand side measures (€)	Type of heating	GHG emission reductions per year (t/yr)	Incentive cost for various levels of direct incentive (€)					Demand side measures cost per tonne of lifetime emission savings (€/tonne)					
				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%	
<b>Albania</b>														
Family house	7,055	Electricity	3.34	706	1,411	2,117	2,822	3,528	11	21	32	42	53	
	7,055	LPG	2.66	706	1,411	2,117	2,822	3,528	13	27	40	53	66	
	8,305	Firewood	0.79	831	1,661	2,492	3,322	4,153	53	105	158	210	263	
Apartment dwelling	1,000	Electricity	0.13	100	200	300	400	500	40	80	119	159	199	
	1,000	LPG	0.10	100	200	300	400	500	50	100	150	200	250	
	2,000	Firewood	0.23	200	400	600	800	1,000	44	88	132	176	219	
Apartment building	38,690	Electricity	21.53	3,869	7,738	11,607	15,476	19,345	9	18	27	36	45	
	41,015	LPG	17.66	4,102	8,203	12,305	16,406	20,508	12	23	35	46	58	
	53,690	Firewood	5.25	5,369	10,738	16,107	21,476	26,845	51	102	153	205	256	

Country / reference building	Cost of demand side measures (€)	Type of heating	GHG emission reductions per year (t/yr)	Incentive cost for various levels of direct incentive (€)					Demand side measures cost per tonne of lifetime emission savings (€/tonne)				
				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
<b>Bosnia &amp; Herzegovina</b>				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
Family house - Sarajevo	7,263	Electricity	14.12	726	1,453	2,179	2,905	3,631	3	5	8	10	13
	8,663	DH	3.38	866	1,733	2,599	3,465	4,331	13	26	38	51	64
	7,263	Firewood	14.12	726	1,453	2,179	2,905	3,631	3	5	8	10	13
Apartment dwelling - Sarajevo	1,500	Electricity	0.98	150	300	450	600	750	8	15	23	31	38
	1,500	Gas	0.21	150	300	450	600	750	36	73	109	145	181
	2,300	Firewood	0.25	230	460	690	920	1,150	47	93	140	186	233
Apartment building - Banja Luka	50,675	Electricity	144.72	5,068	10,135	15,203	20,270	25,338	2	4	5	7	9
	53,075	DH	34.63	5,308	10,615	15,923	21,230	26,538	8	15	23	31	38
	62,675	Coal	149.10	6,268	12,535	18,803	25,070	31,338	2	4	6	8	11
Apartment building - Sarajevo	50,675	Gas	33.99	5,068	10,135	15,203	20,270	25,338	7	15	22	30	37
	53,075	DH	38.53	5,308	10,615	15,923	21,230	26,538	7	14	21	28	34
	62,675	Firewood	11.74	6,268	12,535	18,803	25,070	31,338	27	53	80	107	133

Country / reference building	Cost of demand side measures (€)	Type of heating	GHG emission reductions per year (t/yr)	Incentive cost for various levels of direct incentive (€)					Demand side measures cost per tonne of lifetime emission savings (€/tonne)				
				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
<b>Kosovo</b>				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
Family house	6,330	Electricity	16.40	633	1,266	1,899	2,532	3,165	2	4	6	8	10
	6,650	Fuel oil	4.78	665	1,330	1,995	2,660	3,325	7	14	21	28	35
	7,580	Firewood	1.24	758	1,516	2,274	3,032	3,790	31	61	92	123	153
Apartment dwelling	1,100	Electricity	2.19	110	220	330	440	550	3	5	8	10	13
	2,100	Fuel oil	0.62	210	420	630	840	1,050	17	34	51	68	85
	2,100	Firewood	0.44	210	420	630	840	1,050	24	47	71	95	118
Apartment building	38,690	Electricity	168.62	3,869	7,738	11,607	15,476	19,345	1	2	3	5	6
	56,015	Fuel oil	49.18	5,602	11,203	16,805	22,406	28,008	6	11	17	23	28
	53,690	Firewood	12.70	5,369	10,738	16,107	21,476	26,845	21	42	63	85	106

Country / reference building	Cost of demand side measures (€)	Type of heating	GHG emission reductions per year (t/yr)	Incentive cost for various levels of direct incentive (€)					Demand side measures cost per tonne of lifetime emission savings (€/tonne)				
				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
<b>FYR Macedonia</b>													
Family house	10,125	Electricity	9.66	1,013	2,025	3,038	4,050	5,063	5	10	16	21	26
	10,430	DH	10.04	1,043	2,086	3,129	4,172	5,215	5	10	16	21	26
	11,125	Firewood	1.11	1,113	2,225	3,338	4,450	5,563	50	100	150	200	250
Apartment dwelling	1,650	Electricity	1.09	165	330	495	660	825	8	15	23	30	38
	2,450	Firewood	0.33	245	490	735	980	1,225	38	75	113	150	188
Apartment building	61,840	Electricity	71.23	6,184	12,368	18,552	24,736	30,920	4	9	13	17	22
	63,940	DH	26.97	6,394	12,788	19,182	25,576	31,970	12	24	36	47	59
	73,840	Firewood	8.56	7,384	14,768	22,152	29,536	36,920	43	86	129	172	216

Country / reference building	Cost of demand side measures (€)	Type of heating	GHG emission reductions per year (t/yr)	Incentive cost for various levels of direct incentive (€)					Demand side measures cost per tonne of lifetime emission savings (€/tonne)				
				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
<b>Montenegro</b>													
Family house	6,815	Electricity	5.07	681	1,363	2,044	2,726	3,407	7	13	20	27	34
	6,815	Pellets	0.55	681	1,363	2,044	2,726	3,407	62	125	187	249	312
	7,815	Firewood	1.34	781	1,563	2,344	3,126	3,907	29	58	87	117	146
Apartment dwelling	1,000	Electricity	0.15	100	200	300	400	500	33	66	99	132	165
	2,000	Firewood	0.42	200	400	600	800	1,000	24	48	72	96	120
Apartment building	41,634	Electricity	26.59	4,163	8,327	12,490	16,654	20,817	8	16	23	31	39
	56,634	Firewood	14.52	5,663	11,327	16,990	22,654	28,317	20	39	59	78	98



Country / reference building	Cost of demand side measures (€)	Type of heating	GHG emission reductions per year (t/yr)	Incentive cost for various levels of direct incentive (€)					Demand side measures cost per tonne of lifetime emission savings (€/tonne)				
				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
<b>Serbia</b>				10%	20%	30%	40%	50%	10%	20%	30%	40%	50%
Family house	9,588	Electricity	13.93	959	1,918	2,876	3,835	4,794	3	7	10	14	17
	9,588	Gas	4.05	959	1,918	2,876	3,835	4,794	12	24	36	47	59
	10,588	Firewood	1.36	1,059	2,118	3,176	4,235	5,294	39	78	117	156	195
Apartment dwelling	1,200	Electricity	1.10	120	240	360	480	600	5	11	16	22	27
	1,355	Gas	0.44	136	271	407	542	678	15	31	46	61	76
	2,200	Firewood	0.27	220	440	660	880	1,100	40	81	121	161	201
Apartment building	55,285	Electricity	76.35	5,529	11,057	16,586	22,114	27,643	4	7	11	14	18
	52,960	Gas	21.49	5,296	10,592	15,888	21,184	26,480	12	25	37	49	62
	55,285	DH	20.68	5,529	11,057	16,586	22,114	27,643	13	27	40	53	67

## D.2 Demand+supply-side measures

[TBC]

# Annex E. Affordability analysis

The affordability of loans for energy saving has been assessed for all reference buildings using a model. The model includes the following:

- An energy model which uses building parameters to determine the building's thermal performance before and after demand and supply side measures are implemented. The model includes a parameter to incorporate a rebound effect to reduce theoretical savings, mostly coming from suppressed demand.
- A cost model where local costs for materials and installation are used to determine the total cost of the measures
- A financial analysis model which uses total investment cost, with own funds, incentives, maturity period, interest rates and bank fees to determine monthly payments, internal rate of return, and net present value.

In the results given below, we have used the following parameters:

For all models:

- Demand side measures only, with the exception of heating from fuel wood where we have included upgrade of the heater/stove. This measure is essential given the risks of carbon monoxide poisoning from stove emissions in a better insulated room. For individual dwellings in apartment buildings the only applicable measure included is replacement of windows, although air-to-air heat pumps, and heat recovery ventilation could be considered, they have not been in this analysis.
- Rebound effect parameter of 15% (i.e. we have assumed that 15% of savings are not realized). This figure is based on the experience of the consultant team.

For houses and individual dwellings in apartment buildings:

- Own funds 0%
- Maturity period 8 years - except Kosovo where the term was 6 years
- Credit interest rate 6% - except Kosovo where the interest rate was 10%
- Bank fees 1%

For whole apartment buildings (loans to HOAs or groups of owners):

- Own funds 10%
- Maturity period 5 years
- Credit interest rate 10% - except Kosovo where the interest rate was 12%
- Bank fees 2%

The models have been used to calculate two indicators of affordability – the monthly credit payment as a proportion of median income in the country, and the monthly credit less the energy cost savings as a proportion of median incomes. The analysis was run for various levels of incentive from 0 to 50% in steps of 10 percentage points.

Albania	Incentive level ↓	House			Dwelling			Building		
		Electricity	LPG	Firewood	Electricity	LPG	Firewood	Electricity	LPG	Firewood
Credit as proportion of Income	0%	25%	25%	30%	4%	4%	7%	14%	15%	19%
	10%	23%	23%	27%	3%	3%	6%	12%	13%	17%
	20%	20%	20%	24%	3%	3%	6%	11%	11%	15%
	30%	18%	18%	21%	2%	2%	5%	9%	10%	13%
	40%	15%	15%	18%	2%	2%	4%	8%	8%	11%
	50%	13%	13%	15%	2%	2%	4%	6%	6%	8%
Credit less savings as proportion of Income	0%	10%	-7%	21%	3%	2%	5%	7%	0%	15%
	10%	8%	-9%	18%	3%	2%	4%	6%	-1%	13%
	20%	5%	-12%	15%	2%	2%	3%	4%	-3%	11%
	30%	3%	-15%	12%	2%	1%	3%	3%	-5%	9%
	40%	0%	-17%	9%	2%	1%	2%	1%	-6%	7%
	50%	-2%	-20%	6%	1%	1%	1%	0%	-8%	5%
NPV - 15 years (€)	0%	1,807	9,433	-4,666	-743	-456	-910	-11,893	9,644	-39,139
	10%	2,585	10,212	-3,750	-633	-346	-689	-8,157	13,604	-33,955
	20%	3,364	10,990	-2,833	-522	-235	-468	-4,421	17,565	-28,770
	30%	4,143	11,769	-1,916	-412	-125	-248	-685	21,525	-23,586
	40%	4,921	12,548	-1,000	-301	-15	-27	3,051	25,486	-18,401
	50%	5,700	13,327	-83	-191	96	194	6,788	29,446	-13,217
Leveraged IRR - 15 years	0%	10%	42%	-9%	-14%	-6%	-6%	10%	28%	-6%
	10%	14%	52%	-7%	-12%	-4%	-4%	13%	33%	-5%
	20%	18%	67%	-5%	-11%	-2%	-2%	16%	38%	-3%
	30%	23%	88%	-3%	-9%	1%	1%	19%	46%	-2%
	40%	31%	117%	0%	-6%	4%	4%	24%	57%	1%
	50%	44%	159%	5%	-3%	9%	9%	30%	72%	4%

BIH	Incentive level ↓	House - Sarajevo			Dwelling - Sarajevo			Building - Banja Luka			Building - Sarajevo		
		Electricity	DH	Firewood	Electricity	Gas	Firewood	Electricity	DH	Coal	Gas	DH	Firewood
Credit as proportion of Income	0%	28%	31%	29%	6%	6%	9%	20%	21%	24%	20%	21%	24%
	10%	26%	28%	26%	5%	5%	8%	18%	18%	22%	18%	18%	22%
	20%	23%	24%	23%	5%	5%	7%	15%	16%	19%	15%	16%	19%
	30%	20%	21%	20%	4%	4%	6%	13%	14%	16%	13%	14%	16%
	40%	17%	18%	17%	4%	4%	6%	11%	11%	14%	11%	11%	14%
	50%	14%	15%	15%	3%	3%	5%	9%	9%	11%	9%	9%	11%
Credit less savings as proportion of Income	0%	8%	15%	21%	5%	5%	7%	9%	9%	16%	8%	9%	17%
	10%	5%	12%	18%	4%	4%	6%	7%	7%	13%	6%	7%	14%
	20%	2%	9%	15%	3%	4%	5%	4%	5%	10%	4%	4%	11%
	30%	-1%	6%	12%	3%	3%	4%	2%	3%	8%	2%	2%	9%
	40%	-4%	3%	9%	2%	3%	3%	0%	0%	5%	0%	0%	6%
	50%	-6%	0%	6%	2%	2%	2%	-2%	-2%	2%	-3%	-3%	3%
NPV - 15 years (€)	0%	2,066	-1,081	-4,028	-989	-1,187	-1,410	-14,352	-16,211	-33,898	-13,527	-14,317	-36,549
	10%	2,868	-218	-3,210	-820	-1,018	-1,151	-9,458	-11,086	-27,846	-8,634	-9,192	-30,497
	20%	3,670	645	-2,393	-651	-849	-892	-4,565	-5,961	-21,794	-3,741	-4,067	-24,445
	30%	4,471	1,507	-1,575	-483	-680	-633	328	-836	-15,742	1,153	1,058	-18,392
	40%	5,273	2,370	-757	-314	-511	-375	5,222	4,289	-9,690	6,046	6,183	-12,340
	50%	6,074	3,232	60	-145	-343	-116	10,115	9,414	-3,638	10,939	11,308	-6,288
Leveraged IRR - 15 years	0%	11%	2%	-8%	-11%	-16%	-10%	11%	10%	2%	11%	11%	0%
	10%	15%	4%	-6%	-10%	-14%	-8%	13%	12%	4%	14%	14%	2%
	20%	20%	7%	-4%	-8%	-13%	-6%	16%	15%	6%	17%	17%	4%
	30%	27%	11%	-2%	-6%	-11%	-4%	20%	19%	8%	21%	21%	6%
	40%	37%	17%	1%	-3%	-8%	-1%	26%	24%	12%	26%	26%	9%
	50%	55%	25%	5%	1%	-6%	3%	33%	31%	16%	34%	34%	14%

Kosovo	Incentive level ↓	House			Dwelling			Building		
		Electricity	Fuel oil	Firewood	Electricity	Fuel oil	Firewood	Electricity	Fuel oil	Firewood
Credit as proportion of Income	0%	39%	41%	47%	7%	13%	13%	18%	26%	25%
	10%	36%	37%	43%	6%	12%	12%	16%	23%	22%
	20%	32%	33%	38%	5%	10%	10%	14%	20%	19%
	30%	28%	29%	33%	5%	9%	9%	12%	17%	16%
	40%	24%	25%	28%	4%	8%	8%	10%	14%	14%
	50%	20%	21%	24%	3%	7%	7%	8%	11%	11%
Credit less savings as proportion of Income	0%	16%	20%	29%	4%	10%	7%	1%	11%	12%
	10%	12%	16%	24%	3%	9%	5%	-1%	8%	9%
	20%	8%	12%	20%	2%	8%	4%	-3%	5%	7%
	30%	4%	8%	15%	2%	6%	3%	-5%	2%	4%
	40%	0%	3%	10%	1%	5%	1%	-7%	-1%	1%
	50%	-4%	-1%	5%	0%	4%	0%	-8%	-3%	-2%
NPV - 15 years (€)	0%	2,605	1,185	-1,420	125	-1,376	261	8,999	-15,103	-19,228
	10%	3,387	2,007	-483	261	-1,117	521	12,927	-9,415	-13,776
	20%	4,170	2,829	453	397	-857	780	16,856	-3,726	-8,324
	30%	4,952	3,651	1,390	533	-598	1,040	20,785	1,962	-2,872
	40%	5,734	4,472	2,327	669	-338	1,299	24,714	7,650	2,580
	50%	6,517	5,294	3,264	805	-79	1,559	28,643	13,338	8,032
Leveraged IRR - 15 years	0%	12%	8%	2%	7%	-7%	7%	27%	12%	9%
	10%	15%	10%	4%	9%	-6%	10%	32%	14%	11%
	20%	19%	14%	6%	12%	-4%	13%	37%	17%	14%
	30%	24%	18%	9%	16%	-2%	17%	45%	22%	18%
	40%	31%	24%	13%	21%	0%	22%	55%	27%	22%
	50%	43%	33%	19%	29%	4%	31%	69%	35%	29%

FYRM	Incentive level ↓	House			Dwelling		Building		
		Electricity	DH	Firewood	Electricity	Firewood	Electricity	DH	Firewood
Credit as proportion of Income	0%	31%	32%	34%	5%	7%	19%	19%	22%
	10%	28%	29%	30%	5%	7%	17%	17%	20%
	20%	25%	25%	27%	4%	6%	15%	15%	17%
	30%	22%	22%	24%	4%	5%	12%	13%	15%
	40%	19%	19%	20%	3%	4%	10%	11%	12%
	50%	15%	16%	17%	3%	4%	8%	9%	10%
Credit less savings as proportion of Income	0%	19%	20%	25%	3%	5%	10%	13%	18%
	10%	16%	16%	22%	3%	4%	8%	11%	15%
	20%	13%	13%	18%	2%	3%	6%	9%	13%
	30%	10%	10%	15%	2%	3%	4%	7%	10%
	40%	7%	7%	12%	1%	2%	2%	5%	8%
	50%	4%	4%	8%	1%	1%	0%	3%	5%
NPV - 15 years (€)	0%	-3,275	-3,893	-6,794	-481	-1,094	-22,888	-37,486	-53,332
	10%	-2,158	-2,742	-5,566	-299	-823	-16,917	-31,312	-46,202
	20%	-1,040	-1,590	-4,338	-117	-553	-10,945	-25,137	-39,071
	30%	77	-439	-3,110	65	-282	-4,974	-18,963	-31,941
	40%	1,195	712	-1,882	247	-12	998	-12,789	-24,811
	50%	2,312	1,863	-654	429	258	6,969	-6,615	-17,681
Leveraged IRR - 15 years	0%	-2%	-4%	-10%	-2%	-6%	8%	0%	-6%
	10%	0%	-2%	-8%	1%	-4%	10%	2%	-5%
	20%	2%	1%	-7%	3%	-1%	13%	4%	-3%
	30%	5%	4%	-4%	6%	1%	16%	6%	-1%
	40%	9%	8%	-1%	10%	5%	21%	9%	1%
	50%	15%	13%	2%	17%	10%	27%	13%	4%

Monte-negro	Incentive level ↓	House			Dwelling		Building	
		Electricity	Pellets	Firewood	Electricity	Firewood	Electricity	Firewood
Credit as proportion of Income	0%	16%	16%	18%	2%	5%	7%	12%
	10%	15%	15%	17%	2%	4%	6%	11%
	20%	13%	13%	15%	2%	4%	5%	10%
	30%	11%	11%	13%	2%	3%	5%	8%
	40%	10%	10%	11%	1%	3%	4%	7%
	50%	8%	8%	9%	1%	2%	3%	5%
Credit less savings as proportion of Income	0%	1%	1%	10%	2%	2%	1%	6%
	10%	-1%	-1%	8%	2%	2%	0%	5%
	20%	-3%	-2%	6%	1%	1%	0%	3%
	30%	-4%	-4%	4%	1%	1%	-1%	2%
	40%	-6%	-6%	3%	1%	0%	-1%	1%
	50%	-7%	-7%	1%	1%	0%	-2%	-1%
NPV - 15 years (€)	0%	5,427	5,125	-1,936	-788	-82	-3,058	-20,373
	10%	6,239	5,938	-1,004	-668	156	311	-14,905
	20%	7,052	6,751	-72	-549	395	3,681	-9,436
	30%	7,865	7,564	860	-430	633	7,050	-3,967
	40%	8,678	8,377	1,792	-310	872	10,419	1,502
	50%	9,491	9,189	2,724	-191	1,111	13,789	6,970
Leveraged IRR - 15 years	0%	23%	22%	0%	-14%	4%	16%	8%
	10%	29%	27%	2%	-12%	7%	20%	10%
	20%	37%	35%	5%	-11%	10%	27%	13%
	30%	49%	47%	8%	-9%	15%	35%	17%
	40%	68%	65%	13%	-6%	21%	49%	21%
	50%	97%	93%	20%	-3%	31%	72%	28%

Serbia	Incentive level ↓	House			Dwelling			Building		
		Electricity	Gas	Firewood	Electricity	Gas	Firewood	Electricity	Gas	DH
Credit as proportion of Income	0%	28%	34%	31%	3%	3%	6%	15%	15%	16%
	10%	25%	31%	27%	3%	3%	6%	13%	13%	14%
	20%	22%	27%	24%	3%	3%	5%	12%	12%	12%
	30%	19%	24%	21%	2%	2%	4%	10%	10%	11%
	40%	17%	21%	18%	2%	2%	4%	8%	8%	9%
	50%	14%	17%	15%	2%	2%	3%	7%	7%	7%
Credit less savings as proportion of Income	0%	14%	17%	20%	2%	2%	4%	10%	10%	10%
	10%	11%	13%	17%	2%	2%	4%	8%	8%	9%
	20%	8%	10%	14%	2%	2%	3%	7%	7%	7%
	30%	5%	6%	11%	1%	1%	2%	5%	5%	5%
	40%	2%	3%	8%	1%	1%	2%	3%	3%	3%
	50%	0%	0%	5%	1%	1%	1%	2%	2%	2%
NPV - 15 years (€)	0%	2,015	-1,225	-4,963	-130	-585	-1,073	-21,680	-29,887	-30,225
	10%	3,073	-166	-3,794	3	-452	-830	-16,566	-24,773	-24,886
	20%	4,131	892	-2,626	135	-320	-588	-11,452	-19,659	-19,548
	30%	5,190	1,950	-1,457	268	-187	-345	-6,338	-14,545	-14,209
	40%	6,248	3,009	-288	400	-55	-102	-1,224	-9,431	-8,871
	50%	7,306	4,067	880	533	78	141	3,890	-4,317	-3,532
Leveraged IRR - 15 years	0%	9%	2%	-6%	3%	-7%	-7%	8%	1%	1%
	10%	12%	5%	-4%	5%	-5%	-5%	10%	3%	3%
	20%	16%	8%	-2%	8%	-3%	-3%	13%	5%	5%
	30%	21%	12%	1%	11%	0%	0%	15%	7%	8%
	40%	27%	17%	4%	15%	3%	3%	19%	11%	11%
	50%	38%	26%	9%	22%	8%	8%	24%	15%	16%



## Annex F. Key criteria for HOA lending

Aspect of building management	Does this exist?	Notes (level of implementation, problems with this aspect, etc.)
<b>Critical to developing the market for lending to HOAs</b>		
Legal requirement for owners of a multi-apartment building to be members of the building management body (Home Owner Association - HOA) due to their ownership		
Impossibility of dissolving the management body		
The building is required to gather maintenance fees per apartment or per m <sup>2</sup> of ownership		
There is a high average level of discipline for monthly payments (% of the building)		
Funds are collected by a 3 <sup>rd</sup> party (e.g. Housing Management Company)		
There is a clear and effective process to obtain funds from those owners who have not paid their obligations on time (please describe)		
Major investments (capital construction, borrowing, etc.) are decided by a reasonable level of agreement (maximum 60% of owners/ representative ownership of m <sup>2</sup> )		
Decision of the building organization is mandatory for enforcement with all owners (including absentee owners)		
There is clear title to the ownership of individual apartments		
The HOA has a bank account		
All funds have to go through the HOA's bank account		
Common property is either owned by HOA or by apartment owners		
HOA owns the funds accumulated for repairs		
Owners are directly liable for covering the liabilities of the building association		
<b>Beneficial to developing the market for lending to HOAs</b>		
There is a minimum fee per m <sup>2</sup> or apartment set by law which is adequate		
Management body is a legal entity		
Management body has a stamp/seal		
HMC or some professional management organization is required to manage the buildings (or at least typically do so)		
Typical length of contract with HMCs longer than 1 year		
Book-keeping is managed by a 3 <sup>rd</sup> party (e.g. Housing Management Company)		
Collected funds are subdivided for routine maintenance and reserve funds		
Building funds must cover routine		

Aspect of building management	Does this exist?	Notes (level of implementation, problems with this aspect, etc.)
maintenance and repair costs		
Building funds must cover major maintenance, repair and emergency intervention costs		
Building organization has a chairperson		
Building organization can own property		
Votes are collected either via meetings or via signatures		
Lack of voting by owners of empty/ absentee/ unoccupied apartments can be addressed		
Owners can choose which financial institution (bank) holds the account		
Building associations often have other revenues (such as)		
Building association is required to have a budget of monthly (or annual revenues and expenditures		
Ownership of common spaces is regulated		
Legal Provisions allow Condominiums/HOAs to sell/use land or other common property as collateral		
There are mandatory services (norms) the multi-apartment building management body must comply with (e.g. disinfection, extermination, sanitary clean-up, fire safety)		
The Local Government intervenes when building organizations are not formed		
If a building is in poor condition and requires repairs, there is a mechanism for requiring these repairs (e.g. by the municipality forcing the owners to pay for repairs or face building closure).		
<b>Other useful information</b>		
The average fee (EUR/m2 or EUR/ apartment)		
Votes are allocated per m2 of ownership or per apartment?		
Choosing a service vendor functions is decided by what level of agreement?		
Who administers the funds accumulated in the account (executes payments for suppliers, service contractors, etc.)?		
What communication tools exist?		