



**Energy
Efficient
Mortgages
Initiative**

Energy Efficient Mortgages Pilot Scheme Meeting

27 September 2018, Venice, IT



Welcome & Pilot Scheme Introduction

*Luca Bertalot,
EMF-ECBC*

European Commission

*Diana Barglazan,
Directorate-General for Energy*



Energy-efficiency first: the long-term EU strategy

Diana Barglazan

*Directorate-General for Energy
European Commission*

Venice, 27 September 2018

European Commission's 10 priorities

1. A New Boost for **Jobs, Growth and Investment**
2. A Connected **Digital Single Market**
3. **A Resilient Energy Union with a Forward-Looking Climate Change Policy**
4. A Deeper and Fairer **Internal Market** with a Strengthened **Industrial Base**
5. A Deeper and Fairer **Economic and Monetary Union**
6. **Open and Fair Trade** in a Rules-Based Global System
7. An Area of **Justice and Fundamental Rights** Based on Mutual Trust
8. Towards a New Policy on **Migration**
9. A Stronger **Global Actor**
10. A Union of **Democratic Change**

Long-term strategy

Where we need to go?

- We need to preserve our planet
- We want to leave a healthier planet behind for those that follow

=> EU long-term strategy for greenhouse gas emissions reduction

What's the timeframe?

2050

How do we get there?

We need your input!



Low carbon
transition:
challenge or
opportunity?

#EUHaveYourSay



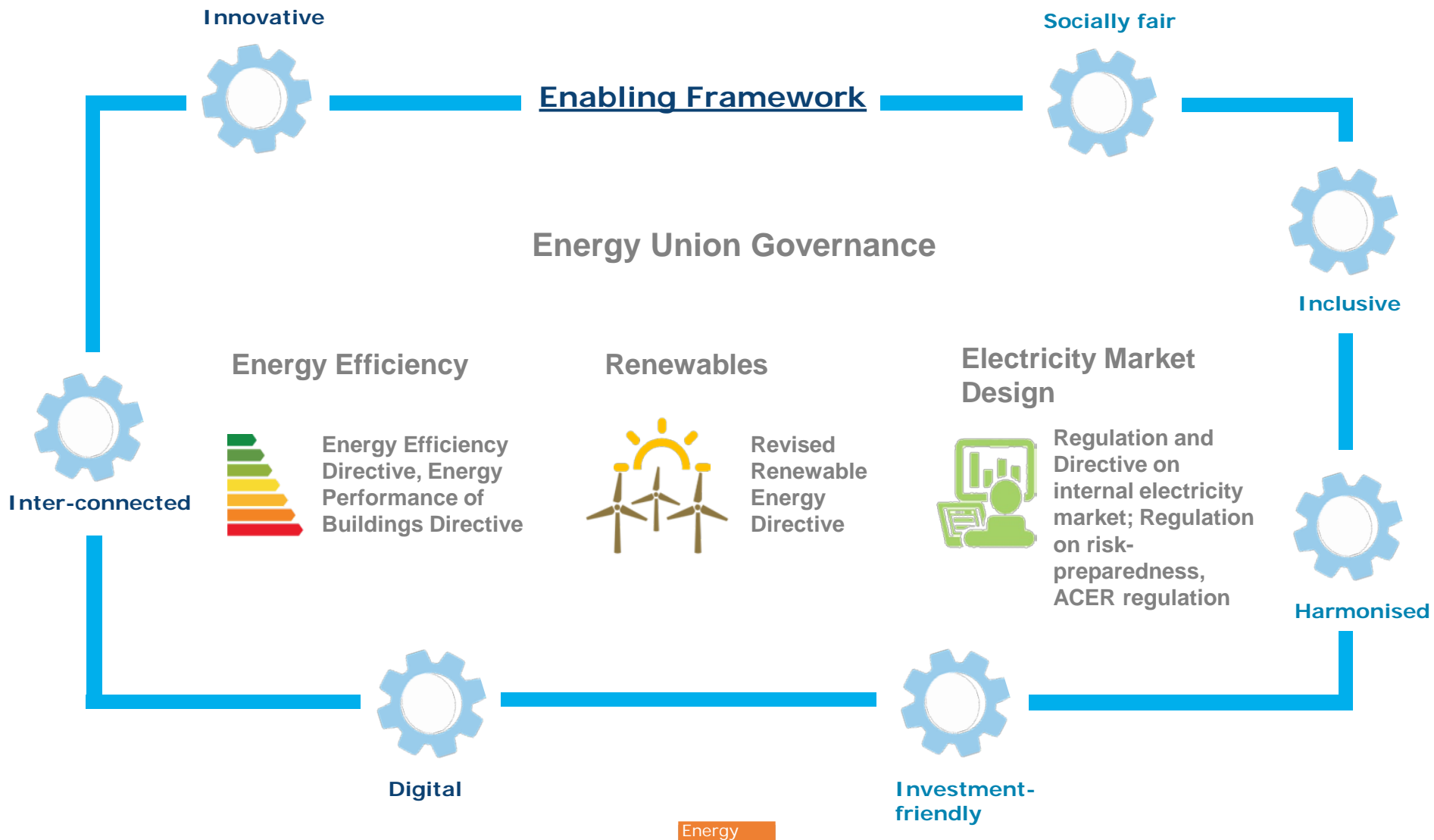
European
Commission

Clean Energy for All Europeans



EU Energy targets by 2030

- At least **40%** cuts in greenhouse gas emissions
- At least **32%** renewables in energy consumption
- **32.5%** energy efficiency



Critical factors



Building renovation has to do more



Financing has a more important role to play



Digital/ICT has a big potential to contribute

Annual investments needed to reach EU energy and climate goals by 2030⁽¹⁾

Investment expenditures in billion EUR'10 (average annual 2021-30)		REF2016 (BAU)	EUCO30	Financing challenge
Demand side	Industry	15	19	4
	Buildings - households	127	214	87
	Buildings - tertiary	23	68	45
	Transport	705	736	31
Supply side	Grid	34	36	2
	Generation and industrial boilers	33	42	9
TOTAL		937	1115	178

(1): Source: PRIMES, as quoted in table 22 (p. 66) of SWD(2016) 405 final (Impact Assessment accompanying the Proposal for a Directive of the European Parliament and of the Council amending Directive 2012/27/EU on Energy Efficiency; Part 1/3).

Transport figures include investments in transport equipment for mobility purposes (e.g. rolling stock but not infrastructure) and energy efficiency. They exclude investments in recharging infrastructure.

Revision of the Energy Efficiency Directive

Provisional agreement reached in June 2018

- ✓ **2030 energy efficiency target: 32.5%** (upwards revision clause by 2023)
- ✓ **Extended annual energy saving obligation beyond 2020**
- ✓ **Better information to consumers** (individual metering and billing of thermal energy; transparent, publicly available national rules on the allocation of the cost of heating, cooling and hot water consumption in multi-apartment and multi-purpose buildings)

Revision of the Energy Performance of Buildings Directive (EPBD)



REINFORCED LONGER TERM BUILDING RENOVATION STRATEGIES

- 2050 vision for a decarbonised and highly efficient building stock
- Stronger financing component
- Enhanced transparency of national building energy performance calculation methodologies



SMARTER BUILDINGS, BETTER CONNECTED



SUPPORTING E-MOBILITY

Long-term renovation strategies

Article 2a

*"In its long-term renovation strategy, each Member State shall set out a roadmap with measures and domestically established measurable progress indicators, with a view to the **long-term 2050 goal** of reducing greenhouse gas emissions in the Union by 80-95 % compared to 1990, in order to ensure a **highly energy efficient and decarbonised national building stock** and in order to facilitate the **cost-effective transformation of existing buildings into nearly-zero-energy buildings**. The roadmap shall include indicative **milestones for 2030, 2040 and 2050**, and specify how they contribute to achieving the Union's energy efficiency targets in accordance with Directive 2012/27/EU."*

Long-term renovation strategies

- *Roadmap **until 2050** (with **milestones**)*
- *Focus on **deep renovation** (building renovation passeports could be used for staged deep renovation) -> min 60% energy savings*
- *Focus on **worst performing buildings***
- *Actions targeting **all public buildings***
- *Focus on **smart technologies** and connected buildings and communities*
- ***Provide support** (facilitate access to various supporting mechanisms)*

Obligation to facilitate access to mechanisms to support mobilisation of investment - Article 2a(3)

Member States shall facilitate access to appropriate mechanisms for:

- (a) the **aggregation of projects**, ...*
- (b) the **reduction of the perceived risk** of energy efficiency ...*
- (c) the **use of public funding** ...*
- (d) guiding investments into an **energy efficient public building stock**, ...*
- (e) accessible and transparent **advisory tools**...*

THE "SMART FINANCE FOR SMART BUILDINGS" INITIATIVE

More effective use of public funds

- Deploying **financial instruments** and flexible financing platforms for energy efficiency and renewable



Assistance and aggregation

**Supporting the
project pipeline**
at EU and local
level



De-risking

**Understanding
the risks and
benefits** for
financiers and
investors



More effective use of public funds

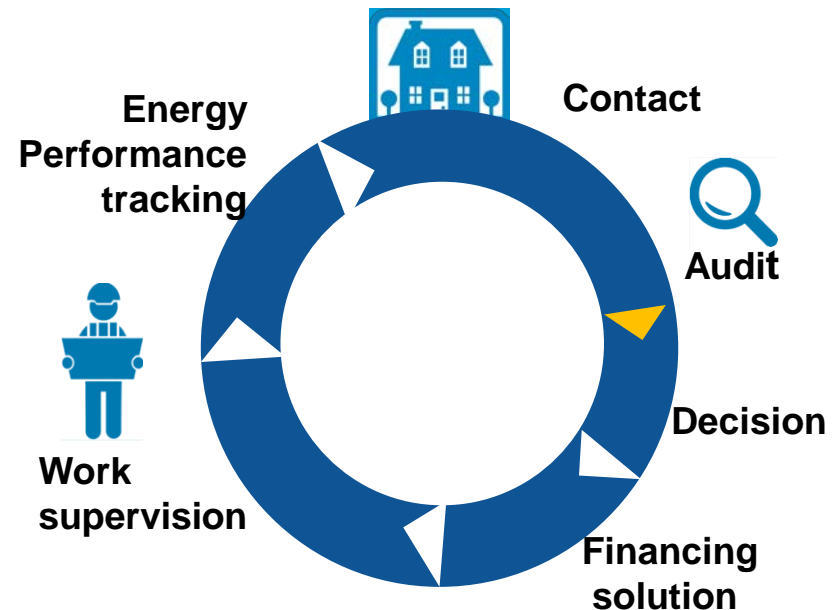
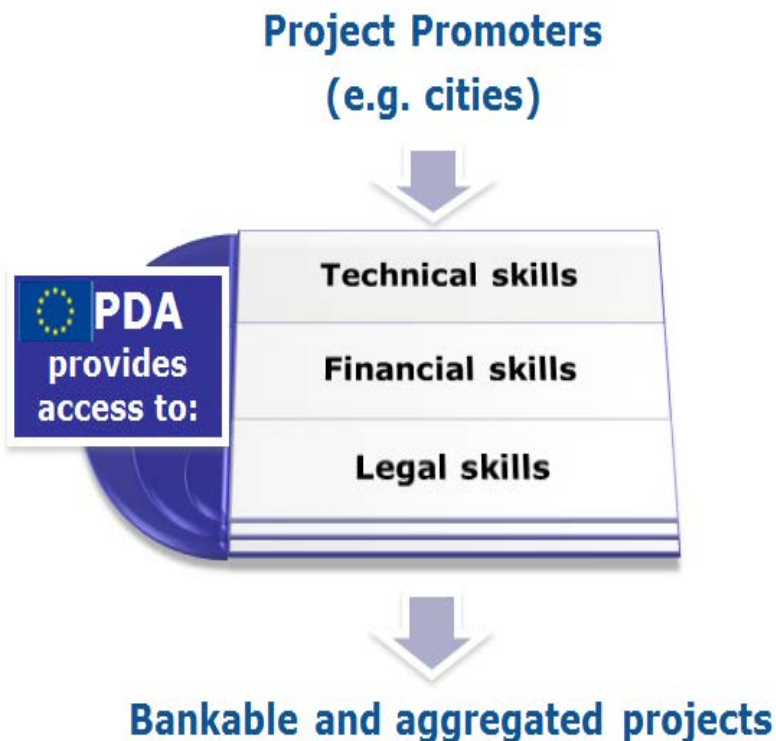
- **Making more use of financial instruments** (to achieve higher leverage)
- **Flexible financing platforms at national level**, mixing different strands of public financing (i.e. **ESIF**, **EFSI**).
- On-line **EU mapping tool** to understand how public funds can be used to support energy efficiency in Europe.
- Facilitate the **use of Energy Performance Contracting** for the public sector
- **Sustainable Energy Investment Forums**



Aggregation services and PDA

➤ EU Project Development Assistance (PDA)

➤ Encourage local/regional one-stop-shops



De-risking energy efficiency investments

*Change the risks perception related to energy efficiency investments - in collaboration with the **Energy Efficiency Financial Institutions Group (EEFIG)**:*

- **The De-risking Energy Efficiency Platform (DEEP)**, an open source database containing real performance data of energy efficiency projects (> 10.000 energy efficiency projects).

<http://deep.eefig.eu>

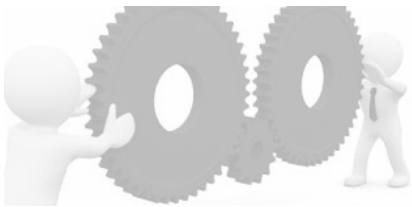


- **An Underwriting toolkit on the value and risk appraisal of energy efficiency investments** (released on 22 June 2017).

<http://valueandrisk.eefig.eu>



EEFIG v3.0 – 3 main work streams



Mainstreaming EE financing

Analyse the link
between energy
efficiency investments
and the financial risk



Building the case for EE financing

With an immediate
focus on energy
efficiency tagging and
taxonomy



Monitoring progress and innovation in EE financing

Monitoring how
financing practices for
energy efficiency are
evolving, for buildings
and industry



...continue the good work



...rally market actors



...support SFSB implementation



...reinforce the EEFIG brand



...coordinate efforts in the sector



...foster innovation

Commission action plan on financing sustainable growth

Adopted in March 2018

Sets out a roadmap for further work and upcoming actions, including :

- *Establishing a unified **EU classification system (taxonomy)** (Proposal for a regulation – May 2018)*
- *Creating **EU labels** for green financial products.*
- *Clarifying the **duty of asset managers and institutional investors**.*
- *Ensuring that clients preferences on sustainability are taken into account.*
- *Incorporating **sustainability in prudential requirements***
- *Enhancing transparency in **corporate reporting**.*





European
Commission

SDG7: Affordable and clean energy

Good news 😊: **energy consumption decreased** during the period

...but...

energy consumption slightly increased since 2015 😐

Bad news: the improvement is very small...**insufficient** 😞

Conclusion:

We need to step up the efforts and make more significant progress

ENERGY CONSUMPTION

in 2016



Primary energy consumption

1543 Mtoe

- 3.3 % since 2011



Final energy consumption

1108 Mtoe

- 0.1 % since 2011



Energy consumption in households per capita

557 in kgoe

- 1.4 % since 2011



Energy productivity

EUR 8.4 per kgoe

+ 9.1 % since 2011



Emissions from energy consumption

87.9 Index, 2000 = 100

- 4.5 index points since 2011

ENERGY SUPPLY

in 2016



Share of renewable energy

17% of gross final energy consumption

+ 3.8 pp since 2011



Energy dependence

53.6% of imports in total energy consumption

- 0.4 pp since 2011

ACCESS TO AFFORDABLE ENERGY



Inability to keep home warm in 2017

8.2% of population

- 2.6 pp since 2012

*Thank you
for your attention!*

Origination/Retail

*Elisabeth Minjauw,
BNP Paribas Fortis (BE)*



Energy Efficient Mortgages Initiative

Subgroup: Origination and Retail

Participating banks	Observers
1) ABN AMRO (NE)	1) vdp
2) Banco BPM (IT)	2) Febelfin
3) BNP Paribas Fortis (BE)	3) UKGBC
4) BNP Paribas (UK)	4) RICS
5) BPER Banca (IT)	5) IFC
6) Crédit Agricole (IT)	6) CRIF
7) Friulovest Banca (IT)	7) UniCredit (IT)
8) Münchener Hyp (DE)	
9) Nordea (DK)	
10) Nordea (NO)	
11) Friulovest Banca (IT)	
12) Volskbank Alto Adige (IT)	

Moderator: *Elisabeth Minjauw*, BNPP Fortis

1. Experience Sharing

The group 1 gathered existing experience in green products and energy efficiency financing :

Banco BPM

Credit Agricole Italy

Friulovest Banca:

Volksbank Alto Adige (Italy)

MünchenerHyp

KBC Belgium

Triodos Belgium

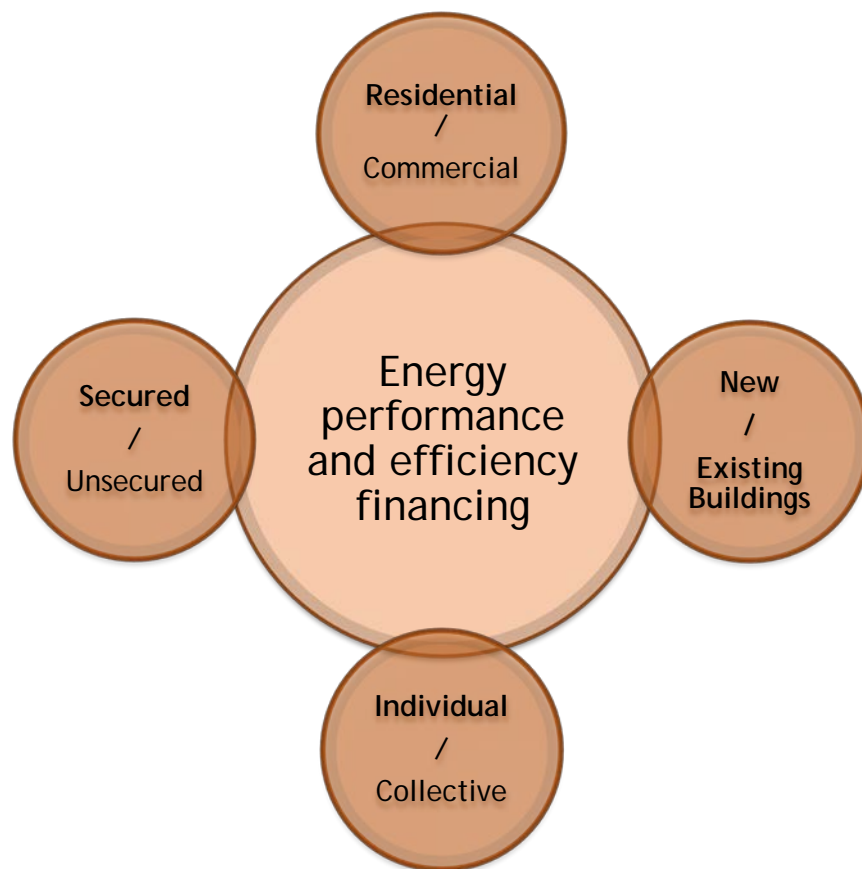
BPER Banca

BNPP Fortis

Banks existing products Main takeaways and concerns

- Customer journey process: too slow and complicated (Administrative burden for both the customer and the bank)
- Make maximum use of complementary funding (Third party financing and public subsidies)
- Certification and audit costs burden when they are not externalised
- How to integrate the existing products in the EEMI framework?

Preliminary step: definition of the group's scope



the group did focus, as a necessary starting point, on **residential individual secured loans for both new and existing buildings** and will expend its scope in due course.

1. Customer Journey

Identified Criticalities

1. Lack of simplicity and transparency
 - ▶ Administrative burden
 - ▶ Long process
2. Additional transaction costs
 - ▶ Valuation
 - ▶ Energy Audit
 - ▶ Certifications costs

Solutions

1. Online Guide
 - ▶ EEM Information Platform
 - ▶ One-stop shop
 - ▶ EE Calculator
2. Link property value with Energy performance
 - ▶ Merge Energy and Valuation expertise / requirements
 - ▶ EE criteria in Valuation reports

Key policy questions:



- 1. EPC and Energy Audit Cost: can we expect in the short/medium term a public subsidy?**
- 2. How to integrate EEM products in the European Mortgage Directive?**

2. Energy Efficiency Criteria

Identified Criticalities

1. EE criteria too ambitious to reach critical market size
2. Lack of public data available (EPC data coverage and access)
3. Lack of common quality standards within current EPC data

Identified Solutions

1. Rely on EPC labels and certification
2. Ask for a recent (2 years max) EPC
3. Rely on publicly available EPC databases (of which the quality and vintage is updated by public body or certified independent agency)

Key policy questions:



1. **Publicly available EPC database for all EU countries?** There is a lack of coherence at the European level (some countries have publicly available databases, some don't).
2. **Certification quality: Need for common minimum quality standards.** Public policies are needed at the European level to ensure that the right level of quality is in place for both energy efficiency criteria and energy renovation (so that the quality monitoring cost is not the burden of the bank nor the borrower)

3. Energy efficiency Monitoring

Identified Criticalities

1. Difficulties for banks to work with energy consumption data
 - ▶ Data privacy issues (GDPR)
 - ▶ Real consumption data issues
 - ▶ Dynamic monitoring issues

Identified Solutions

1. Work with EPC data and specific control points in time (before and after EE upgrades)
2. In cases, externalise energy consumption monitoring to Utilities, ESCOs, ... [e.g. Partnerships solutions]

Marketing

*Davide Vivaldi,
Banca Monte dei Paschi di Siena, BMPS (IT)*



Energy Efficient Mortgages Initiative

Subgroup: Marketing

Moderator: *Davide Vivaldi*, BMPS (IT)

Participating banks	Observers
1) AXA Bank (BE)	1) vdp
2) Banco BPM (IT)	2) Febelfin
3) BMPS (IT)	3) UKGBC
4) BNP Paribas (UK)	4) EBRD
5) BPER Banca (IT)	
6) Crédit Agricole (IT)	
7) NORD/LB (DE)	
8) UCI (ES)	



Subgroup on Marketing Criticalities & Solutions - Premise

CRITICALITIES	SOLUTIONS
Level of awareness in the market	Conduct a national/regional survey about awareness and behaviour of households
Enhance awareness	Communication first through national/regional states and then via professional associations, banks
Enhance the willingness of the buyers, renters, renovators (and new builders) to invest	Mandatory miles stones for each group Tax incentives
Keeping a smooth process	EPC valuable for all target groups without heavy extra costs (EPC cost partially subsidized)

Subgroup on Marketing Drivers & Solutions

DRIVERS	FOCUS	SOLUTIONS
TARGETING	<ul style="list-style-type: none"> a) Retail Customers : home needs (buying, renovation) b) Retail Customers: Energy Efficiency needs c) Building Companies of new residential market d) Retail Customers restoring residential building e) Analysis of Market changes about green mortgages 	<ul style="list-style-type: none"> a) Picking up mortgage applying phase to set specific interviews. Potential customers should be clearly identified by a database which might collect the relevant information. b) Picking up Invoices payment or billing management for energy providers c) In applying of mortgages with big-size restoring purposes; Financial operations for new buildings. d) Special offering for building companies (prospect or already customers) e) Analyze market changes in all countries. There are positive reactions to the concept of an energy efficient mortgage in Germany, Italy, Sweden and United Kingdom, Portugal and Spain.
PRODUCT PROFILE	<ul style="list-style-type: none"> a) Simple Processes (Low impact for Bank Organization) b) Consumer Credit solutions c) Price Management (Flexible Price over performance) d) Lighting devices / Furnitures discounts in partnership 	<ul style="list-style-type: none"> a) Fast evaluations, simple document checklist, customer support partnerships, mortgage processes (no heavy delays) b) Unsecured offering (lighter than mortgages) to introduce and easily promoting e-finance for all. c) Efficiency enhancement price sensitive (based on the energy rating improvement) d) Partnership with main furniture / domestic appliances dealers and energy providers

Subgroup on Marketing Drivers & Solutions

DRIVERS	FOCUS	SOLUTIONS
COMMUNICATION / PRODUCT AWARENESS	a) Enhancing Network – Dedicated Teams	a) Website communication, banner in ATM, Social networks, leaflet in branch offices, Newspapers' interview, Bank associations actions and protocols
	b) Knowledge Management for branch offices	b) E-learning, Vademecum, Focused documents and training
	c) Evaluation Services provided by Banks with energy efficiency oriented product (solutions for energy saving)	c) Business partnership with valuers networks / skilled professional services
	d) Comarketing with any Institutions	d) Develop relations with any Social Institution (Domestic, International, Associations, Dealers...)
	e) Increasing public awareness	e) Involvement of National and European Authorities in the communication process. An EeMAP common message could be proposed
BANKS' REPUTATION OR BRANDING	a) Ethically oriented finance	a) Consumer associations involvement, comarketing with environment care associations or local institutions
	b) Enhancing environment conditions	b) Communications about improvement in building customers or effect of the green mortgages.
	c) New Selling proposition and advanced role in <i>public marketing</i>	c) Force the opening of the new «green» public throughout institutional communication actions.

Partnerships

*Stephanie Sfakianos,
BNP Paribas (UK)*



Energy Efficient Mortgages Initiative

Subgroup: Partnership

Moderator: *Stephanie Sfakianos*, BNPP UK

Participating banks	Observers
1) BNP Paribas (UK)	1) EBC
2) Crédit Agricole (IT)	2) VBC (BE)
3) Nordea Bank (SE)	3) Febelfin
4) KBC Bank (BE)	4) EBRD
5) Rabobank (NL)	5) IFC
	6) UniCredit (IT)

1. Government Partnerships

Subgroup 4 could:

1. Investigate the role that governments have played in various jurisdictions in terms of:

1. Policy

- ▶ providing a clear direction and framework in which home-owners and market parties can operate

1. Regulation

- ▶ some mandatory provisions have been enacted, e.g. Flanders has determined that existing dwellings have to obtain at A- label by 2021
- ▶ A similar direction could be useful for the housing market (UK requires landlords to have appropriate EPC to continue letting properties)

2. Engage in lobbying / Formulate an engagement strategy

- ▶ Current example: Proactive approach taken by the Belgian banks, who approach their government with a single voice

2. Partnerships with Utility Providers

- ▶ Need for smart solutions to give home-owners real-time feedback on the energy performance in their homes
- ▶ Improve public awareness by highlighting possible energy/cost savings from better performance; benchmark with similar homes
- ▶ Utilities to take responsibility for providing guarantees on the workmanship delivered to the consumer. For example in the UK, they are responsible under the Energy Company (ECO) programme and are better placed than financiers to do this

3. EE Advisors

1. Broaden the scope and availability of energy advice

- ▶ There need to be more touch points where consumers have access to energy advice. This could include mortgage and other financial advisers, for whom such advice should be standard
- ▶ Investigate successful cases, e.g. Rabobank's partnership with GreenHome, who provides detailed advice on the best measures that can be taken by home-owners and offers an insight into the expected savings. Point of attention: some partners may have difficulties with the scalability of a larger financial bank and the integration of energy processes in financial credit processes

2. Uniform definition



▶ **Solution 1, Government Partnerships**

▶ Policy:

- ▶ Cooperation between banks to manage the relationships with governments
- ▶ More powerful when speaking with a single voice
- ▶ Review approaches in other jurisdictions:
 - ▶ Belgian approach via the banking federation
 - ▶ Netherlands special workgroup within the Dutch Banking Association

▶ Regulation:

- ▶ Requirement for EPC at an appropriate level to be able to continue to rent properties
- ▶ Consideration as to how governments will or should reward energy efficient homeowners

▶ **Solution 2, Partnerships with Utility Providers**

- ▶ Identify current initiatives (Case Studies, etc...) to be used as a template for future action
- ▶ Identify the major utility providers, and instigate a programme of dialogue to disseminate information on best practices to improve the customer journey

▶ **Solution 3, EE Advisers**

- ▶ Search for partners with expertise, scale and quality certification; identify additional touch points
- ▶ In light of the discussion on policy and regulation, review case studies on best practice and share with broader audience



Potential overlap with other Subgroups

Development of Technical Expertise (SMEs, Valuers, Energy Efficient Experts)

- *Zsolt Toth,
Royal Institution of Chartered Surveyors*
- *Stephen Richardson,
Europe Regional Network, World Green
Building Council*



Energy Efficient Mortgages Initiative

Subgroup: Development of Technical Expertise

Moderators: Stephen Richardson, WorldGBC & Zsolt Toth, RICS

Participating banks	Observers
1) Berlin Hyp AG (DE)	1) CRIF
2) BNP Paribas (UK)	2) European Builders Confederation, EBC
3) BPER Banca (IT)	3) Flemish Construction Confederation, VBC (BE)
4) Friulovest Banca (IT)	4) Febelfin
5) Nordea Bank (SE)	5) Tinsa Group (ES)
6) Rabobank (NL)	6) WGBC
7) Triodos Bank (BE)	7) RICS

Subgroup on Technical Experts Findings – Criticalities Identified:

1. Site inspections
 - ▶ E.g. cost of multiple experts
 - ▶ In some countries EPCs / valuations may be carried out without site-inspection
2. Accreditation of installers and SMEs
 - ▶ How can the bank find installers that they have confidence in – to ensure the quality of the work done during a renovation?
3. No database to link building energy data, such as the EPC, to mortgages
 - ▶ Who holds relevant data and how is it accessed?
 - ▶ Building related data is not only of relevance to the banks, but also needs to be available to the technical experts.
 - ▶ What data is held? Only EPCs? Other data, such as metered consumption?

Subgroup on Technical Experts

Findings – Potential Operational Solutions:

1. Site inspections:
 - ▶ Building renovation passports – may allow for more ‘desk-top’ due diligence to be carried out
 - ▶ Transaction costs should be part of the savings calculations
2. Accreditation of installers
 - ▶ Appropriate existing training packages prior to an installer being accredited.
 - ▶ Governments develop/endorse a Quality Mark (as in UK) – funders can support anything carrying the Quality Mark with reduced due diligence requirements
 - ▶ A system of monitoring and evaluating of installers’ work standards
3. Database linking EPCs and mortgages
 - ▶ Digitalise the EPC and the access to the EPC
 - ▶ Incorporate the EPC into the valuation report
 - ▶ Examples of banks developing their own databases: e.g. Caja Rural de Navarra (ES), Barclays (UK)

Risk Management

*Ruben De Winne,
Belfius Bank & Verzekeringen (BE)*



Energy Efficient Mortgages Initiative

Subgroup: Risk Management

Moderator: *Ruben De Winne*, Belfius Bank & Verzekeringen

Participating banks	Observers
1) Belfius Bank & Verzekeringen (BE)	1) Ca' Foscari
2) BNP Paribas (UK)	2) Febelfin
3) UCI (ES)	3) Goethe University
4) Münchener Hyp (DE)	4) RICS
	5) CRIF
	6) UKGBC
	7) vdp
	8) UniCredit (IT)

Subgroup on Risk Management

Findings – Criticalities and potential solutions:

Criticality #1: The impact of the energy savings on the repayment capacity

- ▶ The impact is difficult to measure and is not taken into account

Potential solution: Development of an energy savings calculator

- ▶ Easy to use
- ▶ To quantify the energy saved in monetary terms
- ▶ By integrating the investment cost, one can also calculate the cost efficiency of the renovation and assess it with the full mortgage cost

Subgroup on Risk Management

Findings – Criticalities and potential solutions:

Criticality #2: EPC data availability and representativeness

- ▶ EPC data is not publicly available
- ▶ Not enough EPC A, B and C labels

Potential solution: Request for a public access to the EPC databases

- ▶ To match with the mortgage loans granted in the last years
- ▶ In order to earmark mortgages with EPC A label => energy efficient mortgages

Subgroup on Risk Management

Findings – Criticalities and potential solutions:

Criticality #3: Default data availability and representativeness

- ▶ Lack of defaults
- ▶ At least 5 years of data is necessary to build a risk model

Potential solution: Use of pooled default data

- ▶ Pooled data from several EU countries
- ▶ Focus on short term (2-3 years duration) and build tangible figures for EC Action plan on sustainable Finance (plans to look at prudential effects in Q2 2019)

Subgroup on Risk Management

Findings – Other criticalities discussed:

- Rebound effect of the energy efficient investment & post-renovation compliance problems
 - ⇒ focus on pre- and post EPC instead of real energy consumption data
- No uniform Loan-to-Value calculation method
 - ⇒ Policy recommendation to include energy performance standards within the valuation methods
- National RWA add-ons can hamper the advantage of lower capital requirements for EEM
- Advantage of lower capital requirements for EEM alone will not be enough
 - ⇒ Need for supplementary mechanisms (e.g. EIB guarantee for EEM, ...)

Funding & Investor Relations

*Claudia Bärldges-Koch,
Münchener Hypothekenbank eG (DE)*



Energy Efficient Mortgages Initiative

Subgroup: Funding and Investors relations

Moderator: *Claudia Bärldges-Koch*, Münchener Hypothekenbank eG

Participating banks	Observers
1) ABN Amro (NL)	1) European Datawarehouse
2) Banco BPM (IT)	2) Febelfin
3) Berlin Hyp AG (DE)	3) Hypoport
4) BNP Paribas (UK)	4) TXS
5) Caisse des Dépôts Group (FR)	5) UK RCBC (UK)
6) Caja Rural de Navarra (ES)	6) vdp
7) KBC Bank (BE)	7) EBRD
8) Münchener Hypothekenbank eG (DE)	8) The World Bank
9) Norddeutsche Landesbank, NORD/LB (DE)	9) UniCredit (IT)
10) Nordea Eiendomskreditt (NO)	
11) Nordea Kredit (DK)	

1. Mortgage loans (assets)

Identified Criticalities

1. New assets & existing energy-efficient assets
 - ▶ Lack of precise definitions
 - ▶ Too ambitious goals
2. Renovated assets
 - ▶ Lack of precise improvement definitions
3. Grandfathering
 - ▶ Question of eligibility after several years

Solutions

1. Energy efficient definitions
 - ▶ EPC level A and B as best practice
 - ▶ Parallel alternative best 20% of the existing real estate market
2. Renovation definitions
 - ▶ Improvement of 1 to 2 levels but minimum C
 - ▶ Parallel alternative minimum improvement 30% of energy consumption
3. Timeline
 - ▶ Grandfathering of loans which were state of the art at time of granting

Key policy questions:



1. **Public National or European EPC register for the real estate market**
2. **EPC obligation for a broader existing housing stock**
3. **Define a process to receive an EPC**

Identified Criticalities

1. Impact of retail loans
 - ▶ Lack of a standardized definition
2. Impact of commercial loans
 - ▶ Lack of a standardized definition
3. Green Bond Principles
 - ▶ Basis for green loan definition
4. Harmonized framework for impact reporting
 - ▶ Dialogue with the initiative

Solutions

1. Retail benchmark
 - ▶ Define national benchmarks for retail mortgage loans
2. Commercial benchmark
 - ▶ Define national benchmarks for commercial mortgage loans
3. Standard
 - ▶ Should be guidance for EeMI
4. Standard
 - ▶ Should be guidance for EeMI

Key policy questions:



- 1. National benchmarks based on the existing energy mix in each country**
- 2. Yearly publishing by an independent authority**

Identified Criticalities

1. Avoidance of non-banking related issues
 - ▶ Tracking of annual energy performance over lifetime of a loan
 - ▶ No set-up in place
 - ▶ No budget
2. Challenging of banks

Solutions

1. Data tracking
 - ▶ Should be covered by energy providers
 - ▶ National registers to map loans and energy consumption
2. No need to challenge first movers or followers
 - ▶ Issuers have gone the extra mile
 - ▶ Banks have invested time and money into their internal green projects
 - ▶ Sometimes reduction of interest rates

Key policy questions:



1. EU commissions could create a regulation for energy consumption tracking as a task of real estate owners via the use of smartmeter

IT Solutions & Data

*Christophe Van Cutsem,
ING Belgium (BE)*



Energy Efficient Mortgages Initiative

Subgroup: IT Solutions & Data

Moderator: *Christophe Van Cutsem*, ING Belgium

Participating banks	Observers
1) Caja Rural de Navarra (ES)	1) Ca' Foscari
2) Friulovest Banca (IT)	2) European Datawarehouse
3) ING Belgium (BE)	3) Febelfin
4) OP Mortgage Bank (FI)	4) Hypoport
	5) RICS
	6) TXS
	7) The World Bank

High level (non-exhaustive) overview of identified criticalities:

- **EPC data**
 - Although EPCs are the obvious starting point in order to gather energy efficiency data, as they are the only EU-wide mandatory indicator, most properties do not have EPC today and those having an EPC are in general the most recent buildings and thus the most energy efficient.
 - EPC is costly
 - Today no trigger to request EPC (what's in it for the property owner)
- **Property data**
 - In several countries limited availability of valuation reports (only in 1/5 of the mortgages applications)
 - Cost of the property valuation report if we would need a valuation report for each mortgage

Banks do not want to be the unique data supplier as a lot of the needed data is not linked with their core business

Subgroup on *IT & DATA*

Potential Solutions: Availability of data

High level (non-exhaustive) overview of identified possible operation solutions:

- **EPC data**

- Building stock: make EPC mandatory within a certain limited timeframe (e.g. 5 years) (cf. Netherlands where all properties have a temporary EPC)
- Validity: limit validity of EPC in time (important for new mortgages)
- Reduce cost of EPC: make EPC free by subsidising it
- Trigger: link EPC to certain fiscal advantages (will also increase the renovation rate)

- **Property data**

- Integrate the property valuation in the EPC, so we need only 1 report which can be created by 1 expert (2 versions: basic & detailed to limit costs if needed)
- Use Fintech solutions and open data to gather the information

To gather all the needed data, we will need different data providers. Each data provider needs to be responsible for the quality & update of the data linked to his core business.

Subgroup on *IT & DATA*

Criticality: Accessibility of data

High level (non-exhaustive) overview of identified criticalities:

- **Format**
 - Data needs to be available in an electronic way stored in a database, which can easily be used. Today a lot of data is already available, but only in paper/pdf version.
- **Structure / definitions**
 - Some data points can be stored in different formats (e.g. EPCs have 4 values -a letter and a number in kWh/m² per year for Energy consumption and a letter and a number in kg CO₂/m² per year for carbon emissions-)
 - Definitions of data points can be different, even within one country, making analyses and comparisons nearly impossible (e.g. LTV and household income are calculate in different ways by different banks)
- **Privacy/GDPR**

Each property needs to be identified by an unique key, allowing all data providers to create, update and read the data points which they are responsible for.

Subgroup on *IT & DATA*

Potential Solutions: Accessibility of data

High level (non-exhaustive) overview of identified possible operation solutions:

- **Format**

- Create an online platform in which all data suppliers can encode the data and which is accessible for legitimate stakeholders.
- All data needs to be linked to an unequivocal and official identification criteria (unique key) for each property

- **Structure / definition**

- Create clear structure requirements and definitions for all data points to be able to compare the values and create usable analyses

- **Privacy / GDPR**

- Define clear rules on who can access/use the data (e.g. banks can only access the data for their portfolio, energy suppliers can only access the real consumption data, ...)

Unique key could be the land register number as this identifies one specific property.

High level (non-exhaustive) overview of identified criticalities:

- **Timing**

- Many data providers will need time to update their IT-systems to comply with the EeMAP / EeDaPP requirements
- Regulatory updates have always priority and a lot of these are ongoing are coming in the next years

- **Costs**

- At bank level we know that IT changes are always very time / workload consuming and thus very costly.
- Need a clear view on extra proven benefits (RWA, capital requirements, ...) on why to do these costs, as banks can stick to the actual mortgage offer and do not need EEM's (if they would not care about sustainability)

Updating / creating the IT systems could be very challenging (seen priorities, costs, ...) even if data availability and accessibility would be resolved.

Subgroup on *IT & DATA*

Potential Solutions: IT-systems

High level (non-exhaustive) overview of identified possible operation solutions:

- **Timing**
 - Have clear guidelines / requirements to allow efficient IT development
 - Define deadlines based on impact evaluation of all impacted data providers
- **Costs**
 - Reduce data needs & reporting to the strict minimum needed
 - Provide subsidies / financing within EeDaPP project
 - Provide extra revenues for Energy Efficient Mortgages (e.g. lower capital requirements, reviewed RWA, ...)
 - Provide easy real-time access to EeDaPP database (API) allowing the same process & commercial efficiency for EEM's compared to classical mortgages

Time and cost management are key to have all data providers on board.

Data Availability

*Max Riedel,
Ca' Foscari University of Venice*

Data Availability

**Energy Efficient Mortgages Pilot Scheme Meetings
27 September 2018**

**Monica Billio and Max Riedel
Ca' Foscari University of Venice**



Effect of EE on Mortgage Performance

State of play

- ▶ **Question:** Does residential building's EE affect the probability of mortgage default?
- ▶ **Main challenge:** data availability
 - ▶ **Inconsistent definition** of EE across and within EU countries
 - ▶ **No standardized framework** for data collection at mortgage origination
 - ▶ **Short sample history**
 - ▶ **Access to available data**
 - ▶ confidentiality concerns are unjustified because we can work with **anonymized data**

Effect of EE on Mortgage Performance

Variables of interest

- ▶ *EE*: indicator of a building's degree of energy efficiency (on a standardized scale)
- ▶ Building: age, type, fuel type, location, occupancy rate, size, pre-/post renovation value
- ▶ Borrower: annual income, credit score, employment status, years at current residence, household size, past energy consumption/bill
- ▶ Mortgage: interest rate, loan type, maturity term, original loan balance, original loan-to-value ratio, prepayment restrictions, months in arrears

(Potential) Data Sources

- ▶ English Housing Survey
- ▶ European DataWarehouse
- ▶ Pilot scheme banks

(Potential) Data Sources

- ▶ English Housing Survey
- ▶ European DataWarehouse
- ▶ Pilot scheme banks

English Housing Survey

Promising dataset but too small

- ▶ Household data: yearly English Housing Survey between 2008 and 2016 (approx. 12,000 respondents p.a.)
- ▶ Variables:
 - ▶ Household: age, size, sex, income, employment,...
 - ▶ Mortgage: original loan balance, outstanding balance origination year, weekly payments, currently in arrears,...
 - ▶ Property: purchase year/price, current value, **initial** EE assessment, **current** EE assessment, renovation-related information,...
- ▶ **But:** final dataset with only 4000 observations was too small to infer conclusion

(Potential) Data Sources

- ▶ English Housing Survey
- ▶ **European DataWarehouse:** loan-level data without direct EE information
 - ▶ Solution: use EE proxy for
 - ▶ Germany: passive house regulation as EE proxy
 - ▶ Netherlands: provisional EE classification table issued by Netherlands Enterprise Agency
- ▶ Pilot scheme banks

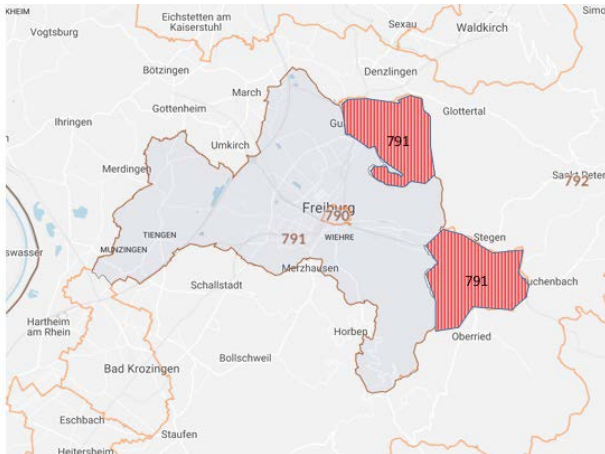
(Potential) Data Sources

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EE analysis at regional level

Local Passive House implementation

- ▶ EE workaround: exploit information on implementation of passive house regulations at regional level
 - ▶ Passive House standards for residential buildings implemented in Freiburg (2009), Leverkusen (2009), Nuremburg (2009), Brussels (2015)
 - ▶ Loan-level info from European Datawarehouse
 - ▶ Postal code with limited information due to data protection and short history given that the RMBS has been issued recently



- The research done on German data is not relevant as it is based on incomplete and non-representative data sample. Further investigation will follow using Dutch deals (i.e. Green Storm series)

(Potential) Data Sources

- ▶ English Housing Survey
- ▶ **European DataWarehouse:** loan-level data **without** direct EE information
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Definition of a methodology to distinguish loans

Rijksdienst voor Ondernemend Nederland/Netherlands Enterprise Agency

WONINGTYPE (C)		BOUWPERIODE (J)								
		T/M 1945	1946-1964	1965-1974	1975-1982	1983-1987	1988-1991	1992-1999	2000-2005	2006 en later
		J1	J2	J3	J4	J5	J6	J7	J8	J9
Vrijstaande woning		G	F	D	C	C	B	B	A	A
Twee / één kapwoning		G	F	D	C	C	C	B	B	A
Rijwoning hoek		G	F	D	C	C	C	B	A	A
Rijwoning tussen		F	E	C	C	C	C	B	A	A
Meergezinswoning	Flat/appartement*	G	E	F	C	C	C	B	B	A
	Maisonnette**	F	E	C	B	C	B	A	A	A

Definition of a methodology to distinguish loans

Rijksdienst voor Ondernemend Nederland

Our table according to property type definition in EDW:

Property type	Construction year								
	1900 - 1945	1946 - 1964	1965 - 1974	1975 - 1982	1983 - 1987	1988 - 1991	1992 - 1999	2000 - 2005	2006 or later
House, (semi-)detached	G	F	D	C	C	C	B	B	A
Flat/Apartment	G	E	F	C	C	C	B	B	A
Terraced House	F	E	C	C	C	C	B	A	A

Sample size: 140,000 residential buildings

Sample period: Jan 2014 to Aug 2018

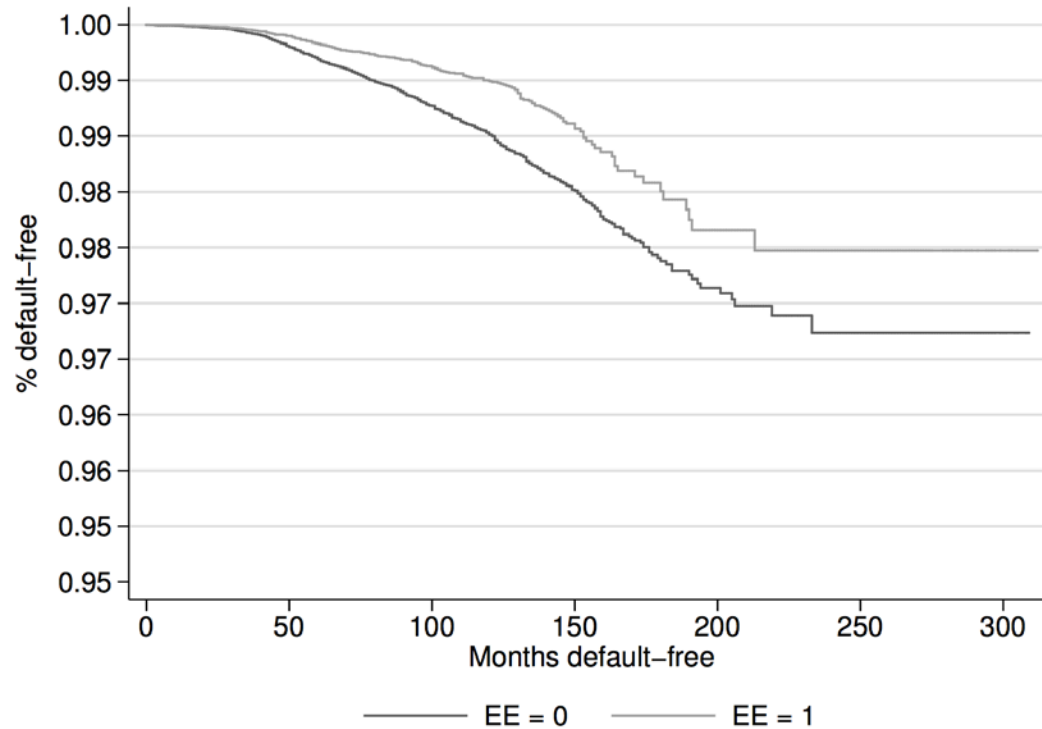
Portfolio analysis

Rating category	All	Defaulted
A	13.95	0.37
B	17.67	0.45
C	27.9	0.56
D	9.52	0.78
E	4.08	1.21
F	11.36	0.87
G	15.52	0.94
Total	100	0.66

Percentage of defaults increases with lower EE-rating



Survivor functions



EE mortgages seem to survive for a longer time period

(Potential) Data Sources

- ▶ English Housing Survey
- ▶ European DataWarehouse
- ▶ Pilot scheme banks:
 - ▶ In close contact with one bank
 - ▶ In talks with two additional banks
 - ▶ What about **your** bank?



Conclusion

- ▶ EE classification is currently imprecise
 - ▶ Rating classification table is based on cadastral data.
 - ▶ Definition of building type is too general.
 - ▶ True EE of a building is currently unobservable to us.
- ▶ We are awaiting data from pilot scheme banks to run the analyses with a more precise EE classification

Energy Efficiency Panel Debate

Panel Moderator
Luca Bertalot
EMF-ECBC

Ann-Cathrin Roensch
European Builders Confederation

Stella Fumarola
CRIF SPA

Sean Kidney
Climate Bonds Initiative

Vincent Mahieu
Hypoport B.V.

Energy Efficiency Panel Debate

*Ann-Cathrin Roensch,
European Builders Confederation*

Importance of construction SMEs

EUROPEAN CONSTRUCTION ENTERPRISES*



94,1%
Microenterprises
less than 10 employees



5,3%
Small enterprises
from 10 to 49 employees



0,5%
Medium enterprises
from 50 to 249 employees



0,1%
Large enterprises
more than 250 employees

* by size – Source: Eurostat 2015

- Micro and small enterprises are the backbone of the construction sector, which makes up for 9% of the total EU GDP
- 3.4 million enterprises are active in the sector, which directly employs about 18 million workers (excluding the value chain)
- Local and regional jobs

Energy efficiency targets cannot be reached without construction SMEs

How to ensure the quality of the works?

- **Essential: Cooperate with national associations and align/respect national practices. Use or adapt existent training/schemes on which e.g. national government rely.**

Option 1: Ensuring the results through cooperation (e.g. Italy and Luxembourg)	Option 2: Ensuring the results through preliminary proofs and documentation (e.g. Belgium, France, Ireland, The Netherlands)
Equal footing of technical expert/architect/designer & construction enterprise in design phase	Proof of qualification (consult existing nationally recognised training schemes)
Common guarantee by “designer & construction enterprise” of a certain energy efficiency savings percentage frame to be achieved	Statement that materials used meet energy requirements and are installed in accordance with current practise
Ensure that testing afterwards (EPCs, sensors etc.) measures building performance without residents behaviour	Verification of knowledge/capacity by enterprise or sub-contractor, if specialised work is needed
	Documentation of work undertaken

Establishment of fund (1% of every home owner’s loan) to co-finance energy efficiency projects in public domain and to advertise energy efficiency works

Thank you for your attention!

ann-cathrin.roensch@ebc-construction.eu

www.ebc-construction.eu

Twitter: @EBC_SMEs

Phone: +32 (0)2 5142323

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Energy Efficiency Panel Debate

*Stella Fumarola,
CRIF SPA*

EeMAP – BPER ACTIVITIES

BPER is team leader of a working group composed by top companies specialized in technical valuation

BPER:
Banca

CBRE

CRIF

RINA



The main aim of the group is to Verify if exist a

***correlation between the increase of energy efficiency and
the increase of the building value.***

This first step is essential to consider the possibility to create a Green mortgage.

For this reason is necessary to know the needs and the awareness of the market about the energy efficiency topics.

HOW TO KNOW THE MARKET ?
Customer Survey

The survey

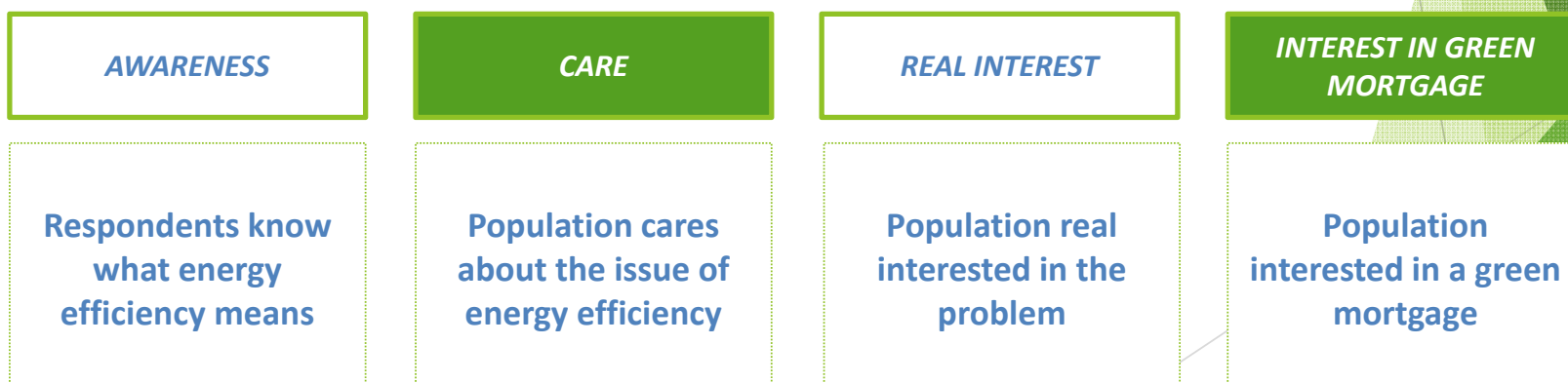
The Analysis Sample



- The questionnaire was submitted by BPER to a sample of own customers and answered by **534 people**
- **The sample:**
 - Geographical split: **North East (53%)** and **Center (19%)** and **South (18%)** of Italy
 - Respondent gender: **2/3 are men**
 - Residential status: **84% own a Home**
 - Employment status: Most of the population is **Employed**, unemployed population refers to students, housewives and pensioners
 - Age: **30% ca under 35 years, 30% ca in the range 36-50 years, the rest above 50 years**



- Four main areas of analysis arise from the survey data:



The evidence

Topics analyzed – Who answer yes

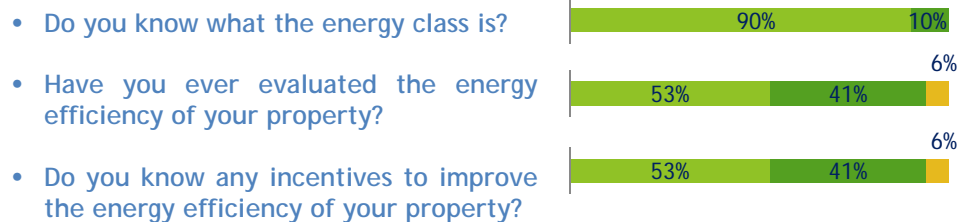
Q Question

R Results: Answer Yes

■ YES
■ NO
■ DON'T KNOW

AWARENESS

Q

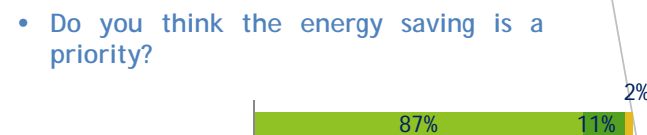


R

More than 44 years old - High Salary -
Owner - More educated

CARE

Q

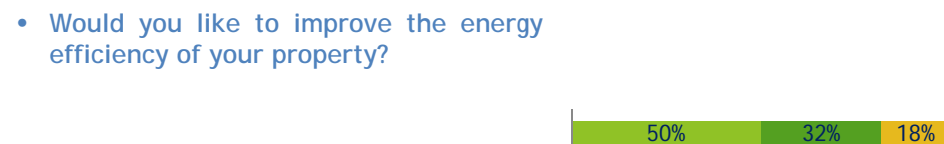


R

More than 44 years old - High Energy efficiency
- Looking for a house to buy or rent - Lower education

REAL INTEREST

Q

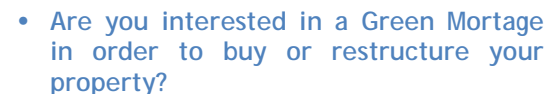


R

Less than 57 years old - Low Salary - Low Energy efficiency
Looking for a house to buy or rent

INTEREST IN A GREEN MORTGAGE

Q



R

More than 44 years old - Low Salary - Women -
Renter - Low education

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*Sean Kidney,
Climate Bond Initiative*

Energy Efficiency Panel Debate

*Vincent Mahieu,
Hypoport B.V.*

Context and current state of mortgage funding market (1/2)

- **Data Driven:** Investing in mortgages is a very data driven venture, the overall market has benefited greatly from the disclosure initiatives introduced by the ECB and BOE.
- **Coherent reporting:** Specifically ABS and RMBS investors and regulators, demand coherent and adequate reporting.
- **Transparency:** Widespread public availability of loan level data and standardised investor reports
- **Consistent & Flexible:** New data or transparency requirements should be consistent with existing legislation and have a contribution to existing rules.
- We outline best practices and standards, considerations and recommendations addressing these issues. From a **technical perspective**

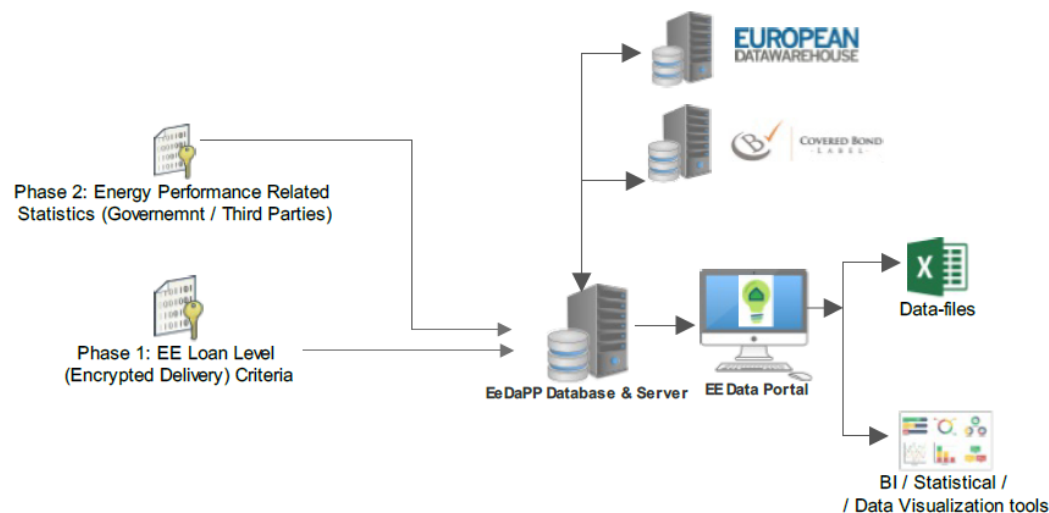
Context and current state of mortgage funding market (1/2)

- We have given an **overview** of :
 - the current mortgage funding market
 - Overview of reporting initiatives
 - repositories
- **Regional Differences EPC:** There is however a need to improve the monitoring of the compliance with the EPC schemes across EU member states.
- **Portal and Protocol can address:**
 - Differences in bodies in charge of accreditation, methodology, validity, data administration, accessibility and (technical format)
 - Guidance in the development of a centralised EPC registry
 - Having a central registry could play an important role in further measuring policy effectiveness of different EPC schemes
 - The protocol ideally encompass a mapping between ECP levels and a glossary listing the criteria and conducts per jurisdiction

Findings

- Aim to establish a framework and portal that is **scalable** and **flexible** to changing regulatory and business needs
- Therefore we outline best practices and standards, considerations and recommendations addressing these issues
- For the current analysis we have taken the reporting requirements, established by working package 3 , as a starting point and working assumption.
- EeDaPP framework could fulfil an important **bridge function** between energy efficient on (micro) household level across EU members states versus the (macro) institutional mortgage funding world.

The best practices in this document are described with flexibility in mind: allowing for changes in input templates, data sources and other requirements over time.



Non-technical recommendations.

- **Data Delivery Agreement:** Integrating different data sources and definitions into one system, handling and administrating large quantities of data from various source systems can offer a challenge. It is important that we define a clear template, instructions and validation rules for the delivery of EE data towards the portal
- **Use Case Identification:** The portal and protocol will be designed in a later stage. Defining clear and reasonable use cases are instrumental for successful development of IT-projects.
- **Diversification and Transparency instrument:** the viability, especially of the available data, should be kept in mind. Mortgage funders are affected by an abundance of reporting, disclosure, audit and retention rules affecting the funding process. Therefore, the portal and protocol should not be seen as a (data) portal but as a funding diversification and transparency instrument.
- **Project management:** As with all projects, especially IT implementation projects, it is important to begin the process by validating the core need, establish use cases, setting up (user and system) requirements, priorities, development, user-acceptance tests, etc.

Technical recommendations.

- **Best Practices:** We have described best practices among common data handling, security, matching, analytical and identification practices employed by multiple repositories from a technical perspective.
- **Bridge function:** As described the portal and framework should study if a matching system could be incorporated or facilitated that would allow for mapping between ECP levels and a glossary listing the criteria and conducts per jurisdiction. Likewise, matching algorithm can be used to 'link' data to ECB, STS and HTT templates.
- **Platform:** A portal can be created on different platforms although a web (only) application seems to be the preferential option. Hosting multiple online / offline platforms can result in difficulties with versioning, updates & patching. Therefore, a preference is to propose a web only implementation, using technologies such as Bootstrap and Angular, which facilitate great flexibility w.r.t. automatic scaling on mobile devices.
- **Data quality:** In ABS reporting, the quality of loan level data can be measured on the following grounds: access, completeness, compliance, consistency, integrity and timing. Additionally, these attributes can be summarised in a Data Quality Score.
- **Selection:** When selecting software, hardware, programming languages, syntax, protocols etc. we should keep in mind the following considerations: Adaptation, Availability & Support, Scalability, Flexibility, Performance and cost.

Conclusions & Next Steps

*Luca Bertalot,
EMF-ECBC*



Energy Efficient Mortgages Initiative

Partners



Università
Ca' Foscari
Venezia



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For additional information on the Energy Efficient Mortgages Initiative

- Visit: <http://www.energyefficientmortgages.eu/>
- Contact:
Luca Bertalot
Secretary General of the EMF-ECBC
lbartalot@hypo.org

