

# EMF ECBC



## ROAD MAP FOR AN ENERGY EFFICIENT (EE) MORTGAGE INITIATIVE

January 2017

# WHY A PAN-EUROPEAN APPROACH?

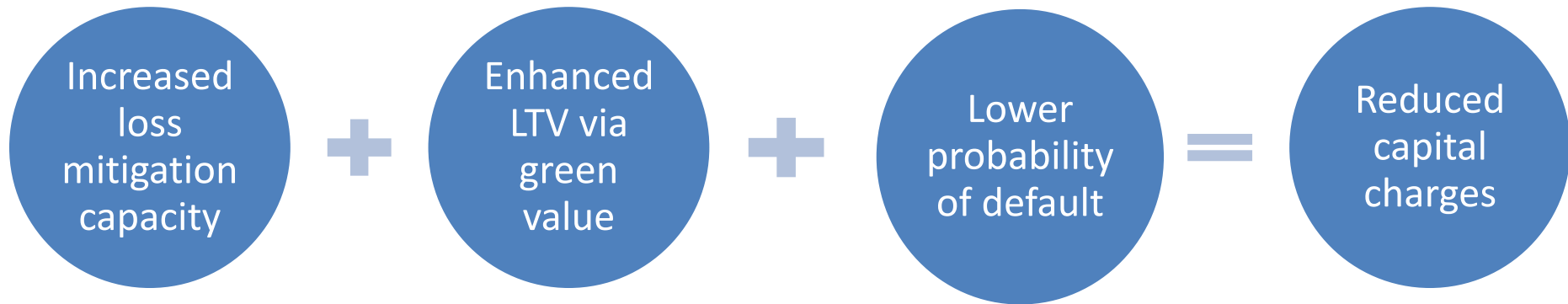
- Buildings are responsible for 40% of EU energy consumption
- Buildings are responsible for 36% of CO2 emissions in the EU
- 75-90% of EU building stock is predicted to remain standing in 2050
- Improving EE of buildings could reduce EU energy consumption by 5%-6% and CO2 emissions by 5%
- EU has set itself an overall 20% energy savings target by 2020 and is now considering increasing this to a 30% target by 2030
- Scale of investment needed to meet the 2020 target is estimated at €100 billion per year – European Commission has underlined need for private investment

# OBJECTIVE & UNDERLYING BUSINESSES CASE

The **ultimate objective** is a pan-European private bank financing mechanism, based on a standardised approach, to encourage energy efficient improvement by households of the EU's housing stock by way of financial incentives linked to the mortgage, and in this way support the EU in meeting its energy savings targets.

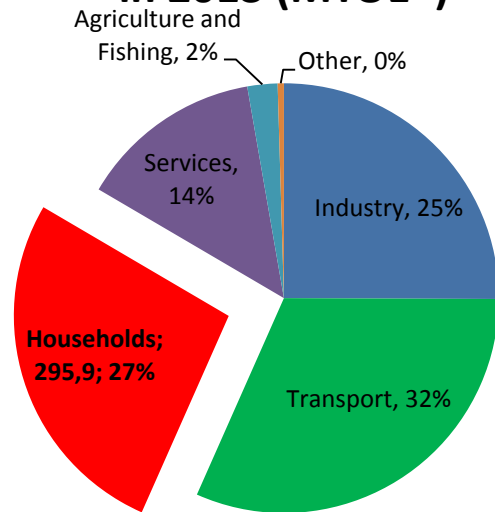
Independent from, but complementary to, public funds or tax incentives

## Underlying business case



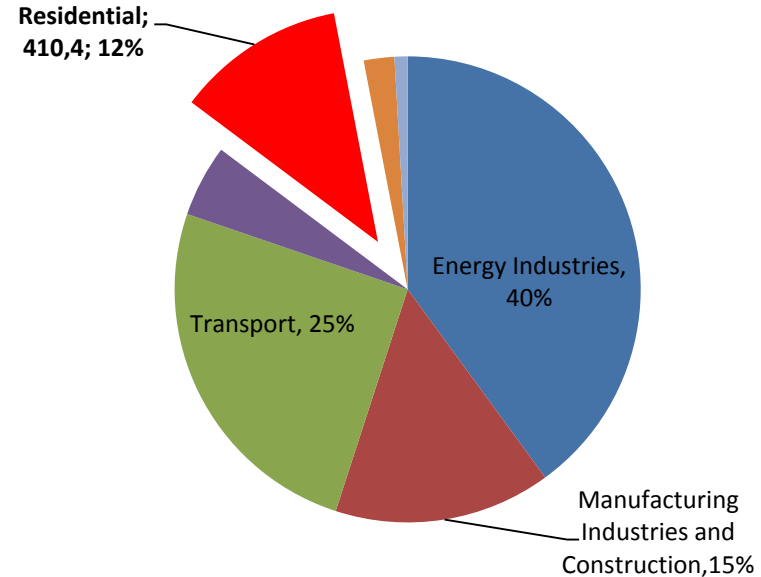
# ENVIRONMENTAL IMPACT OF HOUSING IN THE EU

## Breakdown Energy Consumption in the EU in 2013 (MTOE\*)



EU Total in 2013: 1103.8 Mtoe\*  
Source: Eurostat

## Breakdown of CO2 Emissions in the EU Fuel Combustion Activities in 2012 (MT\*\* of CO2)



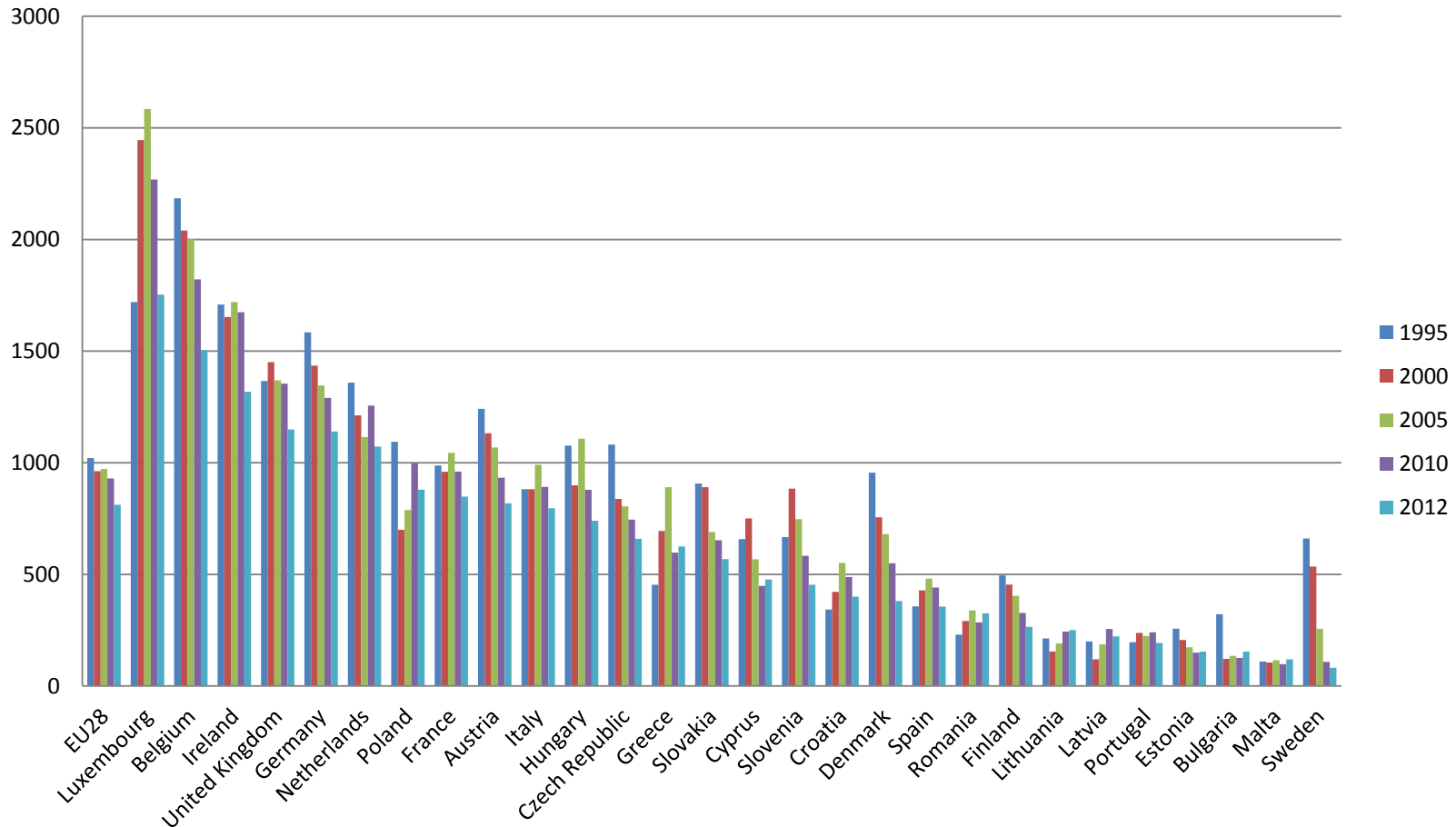
EU Total Emission Fuel Combustion in 2012: 3495.2 Mt\*\*  
Source: Eurostat

\*million tons of oil equivalent: a unit of energy defined as the amount of energy released by burning a tonne of crude oil  
\*\*million tons

# ENVIRONMENTAL IMPACT OF HOUSING IN THE EU

## ENERGY CONSUMPTION - CHARTS

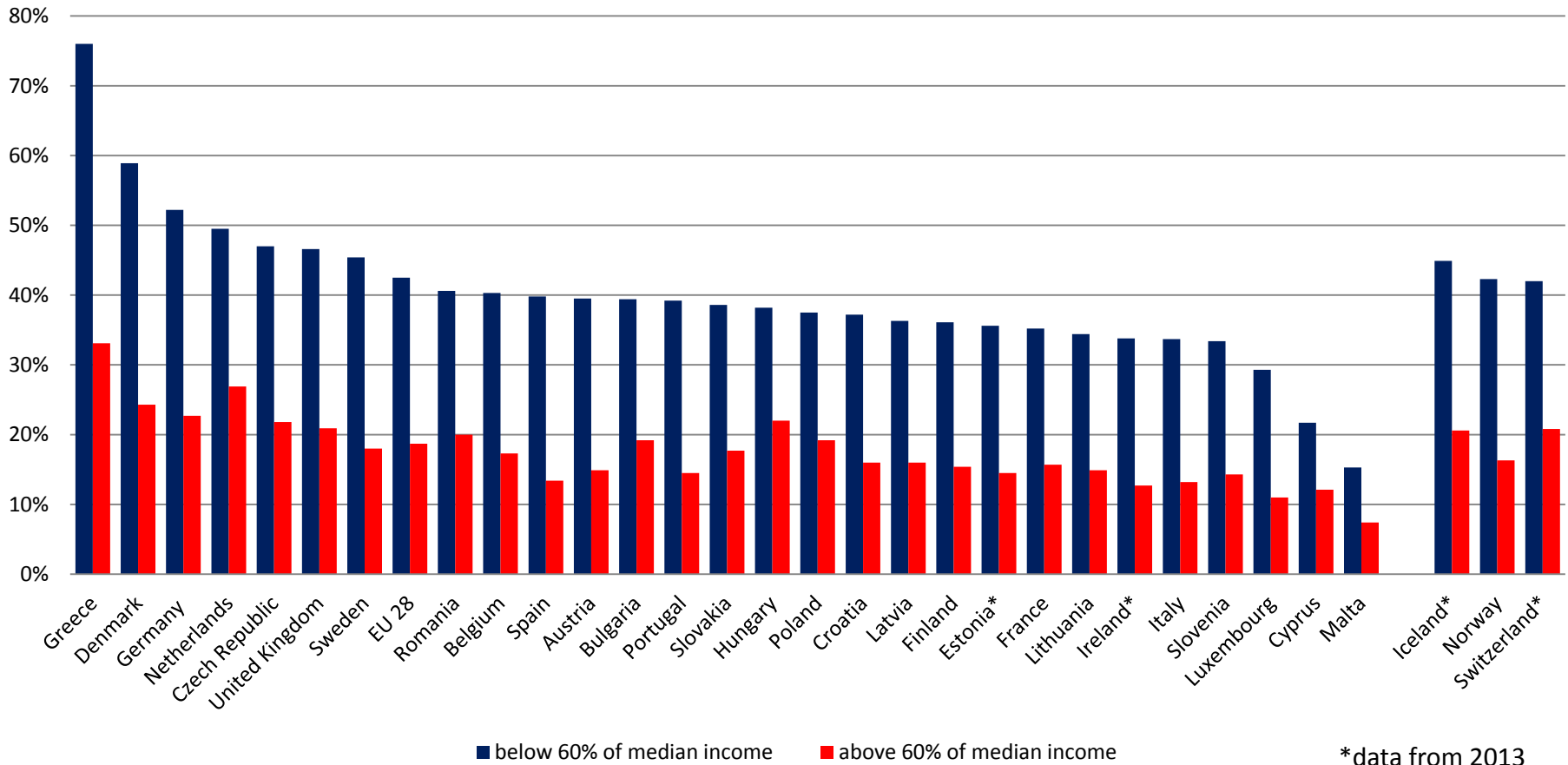
Co2 emissions per capita per year for housing in kg



Source: Eurostat

# HOUSING COST IN DISPOSABLE INCOME

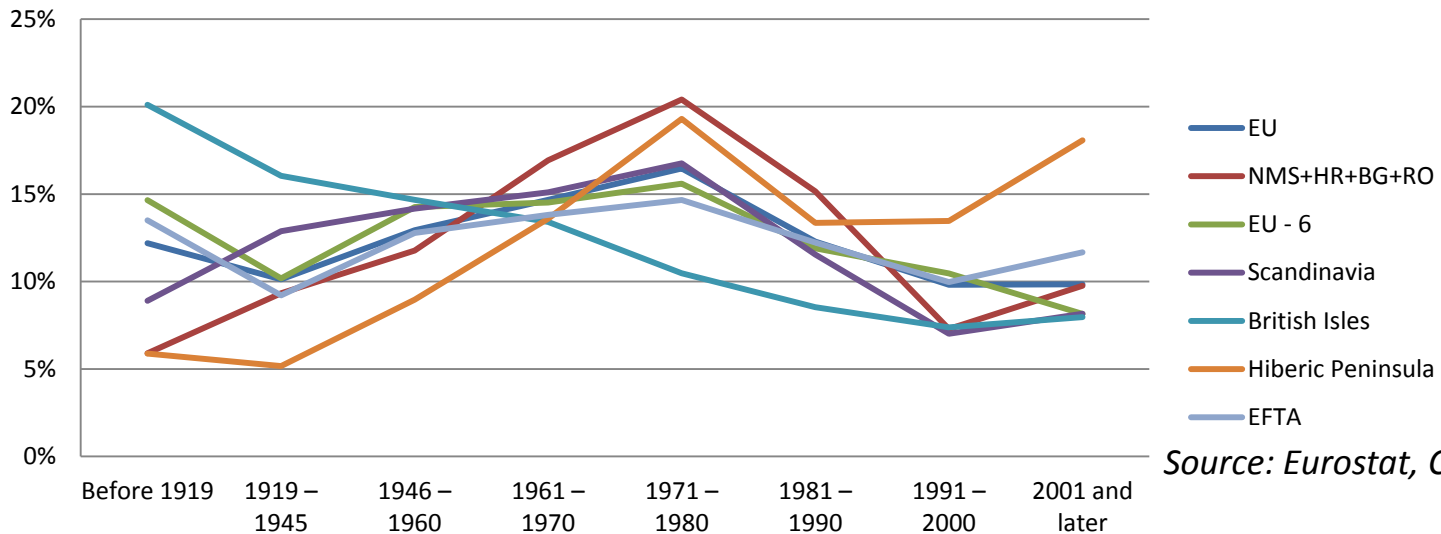
Share of housing costs in disposable income, by income group (2014)



Source: Eurostat

# AGE STRUCTURE OF DWELLINGS IN EUROPE

## Age Structure dwellings in Europe



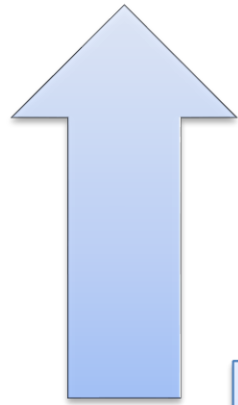
Source: Eurostat, Census 2011

- In most EU Member States, considerable share of total number of dwellings was built during post-war period, between 1946 and 1980
- In Italy, nearly 60% of existing dwellings were built during that period, 45-50% in Germany, the Baltics, Greece, Hungary, Finland and Sweden
- Post 2000, several new dwellings were built in Ireland, Greece, Poland, Portugal and Spain
- In Belgium and in the UK between 20% and 25% of dwellings were built before 1919

# EMF-ECBC EE MORTGAGES INITIATIVE



# UNDERLYING MARKET CHARACTERISTICS IMPACTED BY EE



**Retrofitting** impacts positively on property value ensuring **wealth conservation & loss mitigation** by preventing “brown discount”



**EE** leads to a reduction in the impact of energy costs to income, reducing borrowers' **probability of default**

# SEVERAL STUDIES ILLUSTRATE EE POSITIVELY IMPACT PROPERTY VALUE

Study	Country	Sample	Label type	Type:	Major findings
Brounen and Kok (2011)	Netherlands	2008-2009	A-G	Sales	Significant positive effects on sales prices. Relative to a D-label: A (10.2 %), B (5.5 %), C (2.1 %), E (-0.5%), F (-2.3 %) and G (-4.8 %).
Hyland et al. (2013)	Ireland	2008-2012	A-G	Listing price	Significant positive effects on sales & rental prices. Sales prices relative to a D-label: A(9.3 %), B (5.2 %), C (1.7 %), E (0 %), F/G(-10 %)
Sbi (2013)	Denmark	2011-2012	A-G	Sales	Significant positive effects on sales prices. Relative to a D-label: A/B (6.4 %), C (6 %), E (-6.2 %), F (-12.3 %) and G (-19.4 %).
Fuerst et al. (2015)	UK	1995-2012	A-G	Sales	Study show a measurable and significant positive effects on house prices. Dwellings with EPC sell: A/B (5 % premium), C (1.8 %), C (1.7 %), E (-0.7 %), F(-0.9 %) and G(-6.8 %).
Copenhagen Economics (2015)	Denmark	2006-2014	A-G	Sales	Clear and significant influence on house prices: A (10.2%), B (6.6%),C (3.5%),D (0.0%), E (-3.6%),F (-7.6%), G (-12.1%)
CRIF (2016)	Italy	2012-2015	A-G	Valuation	Direct correlation between property value and energy efficiency - study demonstrates undervaluation of more energy efficient properties and over-valuation of less energy efficient properties: A (-12.53%),B (-8,02%), C (-4.53%), D (-2,98) E (-0,65%), F (0.04%), G(3.79%)
Kok and Kahn (2012)	USA, Cali.	2007-2012	Green Label	Sales	California homes labelled with an Energy Star, LEED or GreenPoint rating sell for 9% more than comparable houses.

# UNDERLYING INCENTIVE CHAIN

## ***Borrowers:***

- Preferential interest rate and/or addition retrofitting funds
- Increased property value due to retrofitting, ensuring wealth conservation
- Lower running costs of the building

## ***Lenders:***

- Energy savings result in a lower PD due to increased disposable income
  - Increased risk mitigation capacity as increase in property value reduces LGD
- ⇒ Lower capital requirements for energy efficient mortgages
- Protection of loan portfolio against brown discount

## ***Investors:***

- Response to increasing investor demand for investments with sustainable aspect
- Diversification of investor portfolio & protection against brown discount
- Incentivises segregation of existing green assets
- Increased risk management in terms of credit, asset & performance risk

## ***SMEs:***

- Additional funds provide a flow of capital into the real economy
- Supports SMEs activity in the retrofitting sector

# FURTHER ASPECTS

## ***Valuation Profession:***

- EE is strong potential value driver & risk factor and integration of EE in valuations & credit risk assessment could transform current lending practices
- Whilst conventional market-based valuation methods are fit to account for EE features in valuations, there is limited quality rental & sales evidence to allow valuers to accurately determine incremental value impact
- Initiative could be help to overcome this by building up evidence base and explicitly instructing banks and valuers to request, collect & make use of additional data

## ***Consumer Behaviour:***

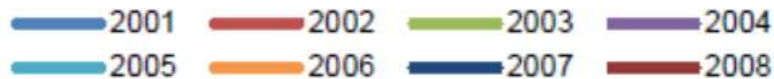
- Initiative can also influence consumer behaviour by encouraging good energy behaviour, thus reducing energy consumption (energy bills)
- Academic literature demonstrates potential for energy savings of up to 20% via targeted behaviour

## ***Better Risk Management:***

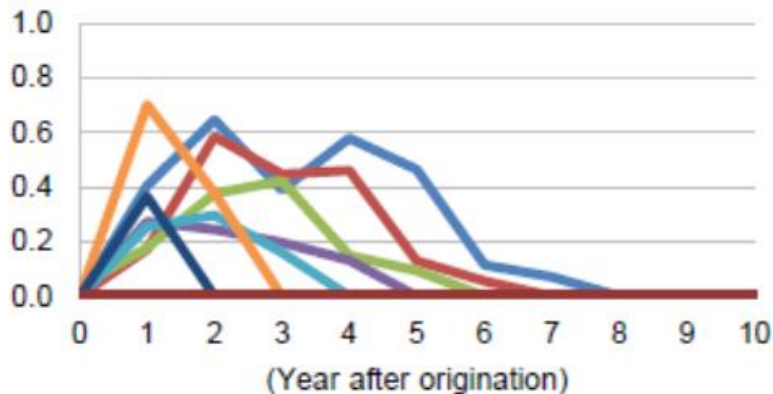
- **Lower Credit Risk:** Due to reduced PD and LGD
- **Lower Asset Risk:** Due to “green value” and protection against “brown discount”
- **Lower Performance Risk:** Due to robust assessment of EE improvement ensuring lower energy consumption and “green value”

# EE'S IMPACT ON POSSESSIONS OF MORTGAGES

## Lender Possession Rates



(% of originated loans by vintage)



Source: Sample of mortgage loans

Source: Fitch Ratings

- Available data show that rate at which properties are taken into possession - one reason for repossession may be default on mortgage loan - rises during the first 3 to 4 years after origination, peaking in years 4 to 5
- This is because it takes time for personal circumstances of borrower to deteriorate to degree that he/she is no longer able to service loan
- Once this critical period has passed, main factors for default are principally personal events, such as illness or divorce

# BROADER PERSPECTIVE

## ***Jobs and Growths:***

- Improvement in private investment in EE improvement via retrofiting
- Support for SMEs and contribution to job agenda under Juncker Plan

## ***Financial Stability***

- Increased due diligence for consumers, issuers and investors
- De-risking of banks' balance sheets and management of non-performing loans
- Enhanced transparency and pricing in the market

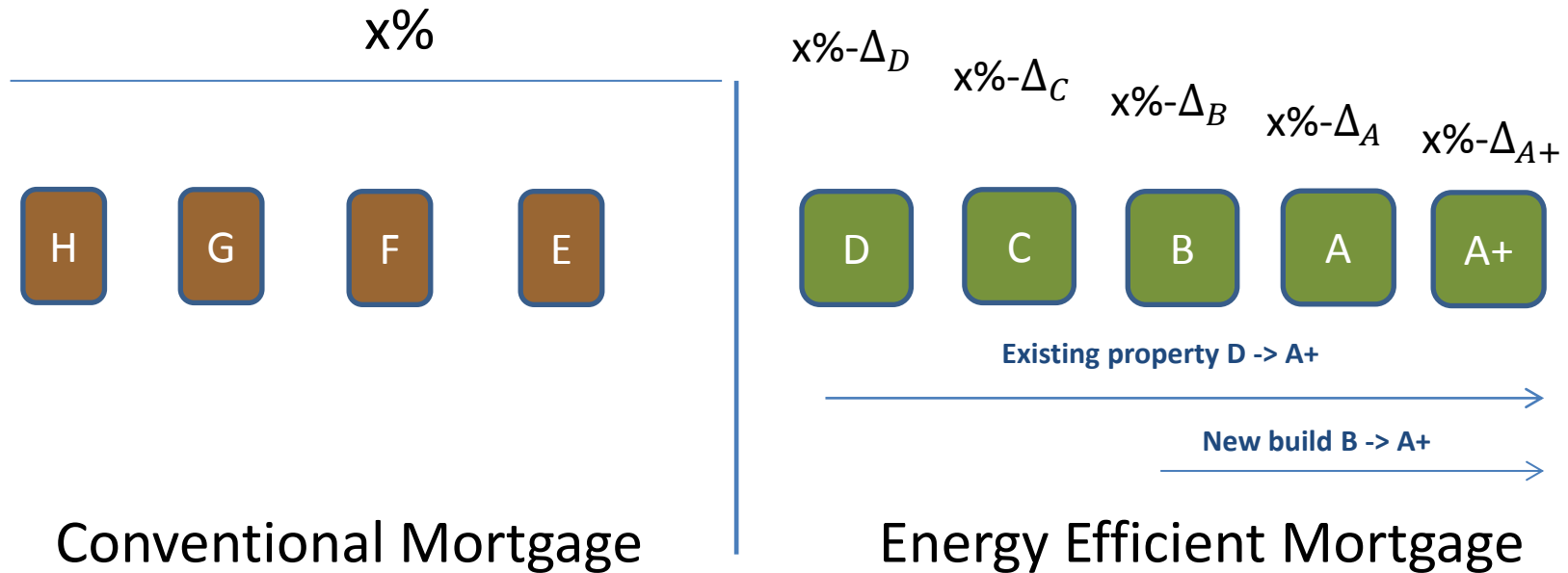
## ***European Commission, Climate and Energy Framework***

- Aims to encourage EE investment in buildings
- EE Directive requires Members States to:
  - Establish and periodically update long-term strategies for investment in renovation of national buildings blocks;
  - Oblige energy companies to achieve yearly energy savings of 1.5% of annual sales to final consumes;
  - Increase consumer awareness of energy consumption & transparency of data
- Energy Performance of Buildings Directive and EE Directive are both being reviewed by the European Commission to ensure ambitious framework

# METHODOLOGY

# METHODOLOGY - FINANCING MECHANISM

- Key challenge: to incentivise energy efficient investment in existing dwellings, which constitute bulk of EU housing stock
- Based on a **set of EE indicators**, lenders could offer:
  - *New Builds*: Discount in interest rate for new builds with energy rating A+/A or B;
  - *Existing property*: Discount in interest rate according to improvement in energy rating of property between D and A/A+

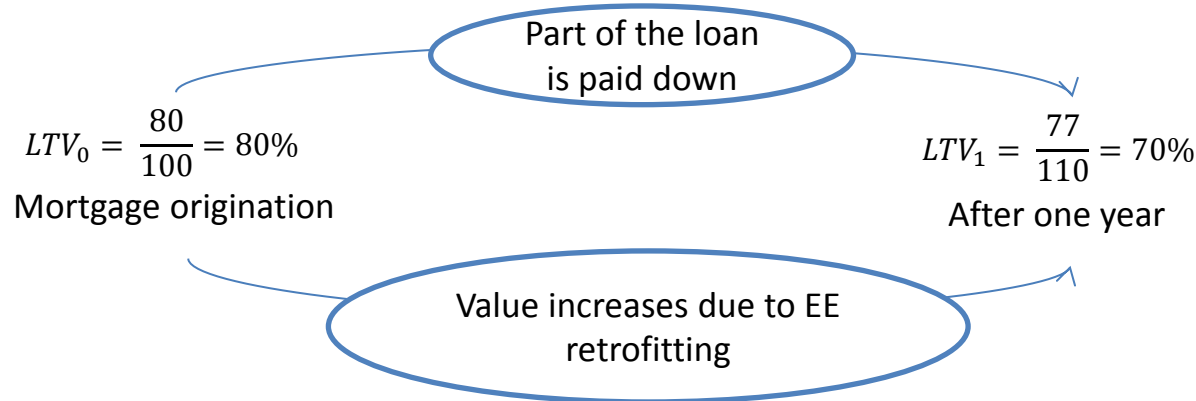


$x\%$ : mortgage interest rate  
EE delta:  $\Delta_{A+} > \Delta_A > \Delta_B > \Delta_C$



# METHODOLOGY - ADDITIONAL FUNDS VIA RECOGNITION OF “GREEN VALUE”(I)

## Example 1: LTV Calculations with and without “green value”



## Example 2: LTV remains 80 % in return additional funds for retrofitting at the same interest rate

$$LTV_0 = \frac{80 + 8}{110} = 80\%$$

Without cash advance factoring in EE improvement

$$LTV_0 = \frac{80}{100} = 80\%$$

Without EE improvement

$$LTV = \frac{\text{Loan granted for the mortgage}}{\text{Value of the real estate}}$$

## METHODOLOGY - ADDITIONAL FUNDS VIA RECOGNITION OF “GREEN VALUE” (II)

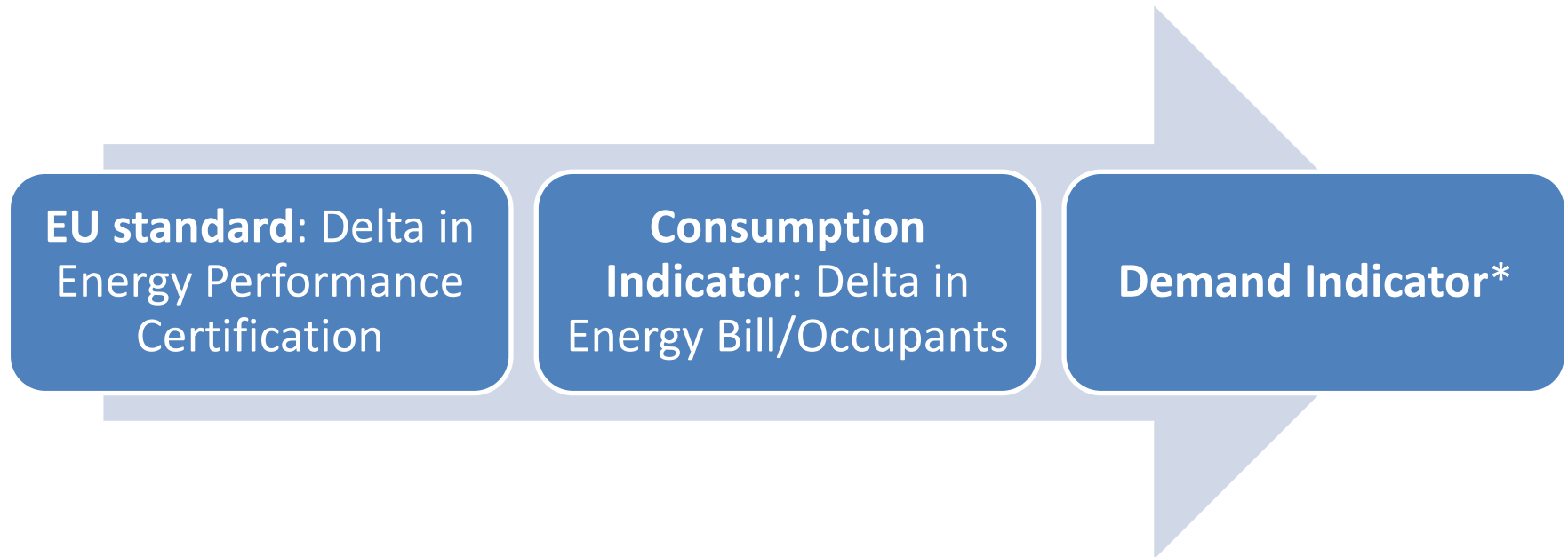
- It is key that improvement in LTV, due to increase in EE, can be factored into credit risk assessment of bank
- BCBS is reviewing SA for credit risk, point 52 on page 35 of BCBS December 2015 Consultation states:

***“Modifications made to the property that unequivocally increase its value could also be considered in the LTV”***

- ***This mechanism will allow:***
  - Increased value to be factored in at origination
  - Borrowers to carry out retrofitting works
  - Provide a flow of capital into the real economy

## METHODOLOGY - EE INDICATORS

Three pillar approach to certification of actual energy performance:



*The metrics and value will bring the mortgage industry in-line with the EU on energy*

**\*One possibility:** The EE Directive ([2012/27/EU](#)) foresees an ‘energy performance contracting’ which is a contractual arrangement between the beneficiary and the provider of an EE improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of EE improvement or other agreed energy performance criterion, such as financial savings.

## METHODOLOGY - DATA WAREHOUSE

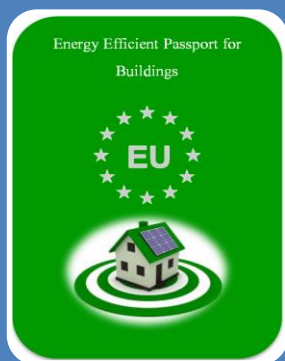


### IT Data warehouse Platform

- Mortgage data line by line
- EE data levels unit by unit
- Funding instruments adopted
- Enhance asset liabilities management
- Increase market transparency

- At the heart of Initiative is a **comprehensive “dataset”** on actual financial performance of existing mortgages according to their energy rating.
- Data gathered will be processed and analysed in order to understand the impact of EE on borrowers’ PD and on LGD.
- Results of the analysis will be made available to the public free of charge.
- Longer-term intention is to compile this extensive dataset in a **common & central “data warehouse”** to clearly register and record link between property, energy rating & loan performance, so that these assets can be identified for “green” funding purposes, for example.

# METHODOLOGY – BUILDING ENERGY PASSPORT



## Energy Efficient passport for buildings

- For building owners
- Recognised throughout the EU
- Value and clarity of the improvements installed in the building
- Non-performing loans mitigation
- Improving market transparency

- An EE building passport could propose a tailor-made, ready to implement action plan to the building owner, based on an affordable audit
- It could include tailor-made improvement recommendations and therefore act as an important communication instrument for EE mortgage product itself
- It would be meant as a holistic tool covering all aspects of buildings
- It would accompany the building over its life time
- The passport would ensure that energy improvement considerations are well integrated each time works are undertaken in a building
- Having a passport would be a prerequisite to obtain an energy efficient mortgage



## European Mortgage Federation European Covered Bond Council

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