



EeMAP

Energy efficient
Mortgages
Action Plan



CREATING AN ENERGY EFFICIENT MORTGAGE FOR EUROPE

TOWARDS A NEW MARKET STANDARD

EUROPE REGIONAL
NETWORK



WORLD
GREEN
BUILDING
COUNCIL



The World Green Building Council (WorldGBC) is a global network of Green Building Councils, which is transforming the places we live, work, play, heal and learn. WorldGBC's Europe network is the common voice for a sustainable built environment in Europe: representing Green Building Councils in over 20 countries, 8 Regional Partners and over 4,500 diverse members across the construction and real estate sectors.

<http://www.worldgbc.org/our-regional-networks/europe>

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Thanks to the Green Building Councils working with us on EeMAP, our Regional Partners and the members of our expert advisory committee for their advice and review. Contact details for national Green Building Councils who are working with EeMAP in their respective countries are provided at the end of this report.

The views expressed in this report are those of the WorldGBC's Europe network staff and do not necessarily reflect the views of all other parties named above.

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PARTICIPATING EUROPE NETWORK GBGS



PARTICIPATING REGIONAL PARTNERS



OTHER SUPPORTING ORGANISATIONS IN OUR EXPERT ADVISORY COMMITTEE





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EXECUTIVE SUMMARY

Greening our buildings is at the heart of our fight against climate change. Greener, more energy efficient buildings can also help to reduce the exposure to risk for property owners and the banks that finance them. Energy efficient mortgages can therefore be a powerful tool to incentivise investment in greener buildings. The new market standards set out in this report pave the way for banks to act now to mainstream the energy efficient mortgage market, not only de-risking their mortgage portfolios but also playing a key role in securing the future of the planet.

The benefits of improving Europe's building stock stretch far beyond meeting climate goals; increased comfort and wellbeing, lower energy bills and more investment for local economies are just a few examples. Yet the risks of not taking action are equally stark and long term: rising operating costs, the devaluation of inefficient buildings in an increasingly carbon-conscious society and non-compliance with ever more stringent legislation threaten banks and borrowers.

With 97% of Europe's buildings currently deemed inefficient, these risks are almost universal, affecting every mortgage portfolio. Given the current poor state of the European building stock, it is estimated that the rate of energy efficient renovation must treble – from 1% to 3% - if Europe is to meet its climate and energy goals.

Mortgages account for around €7 trillion, or a third of the European banking sector's assets, and are the best-known form of property finance for consumers. This makes energy efficient mortgages a powerful economic incentive to tackle the risks from poor performing buildings. This report marks a first for the sector; setting out a new market standard and a clear pathway for banks to follow to begin addressing the problem of poor performing buildings in their mortgage portfolios. In doing so they will help to create a more sustainable property sector for future generations.

The World Green Building Council's Europe network and our partners in the Energy Efficient Mortgages Initiative (www.energyefficientmortgages.eu) are creating a European energy efficient mortgage to incentivise borrowers – through reduced interest rates and increased loan amounts – to improve the energy efficiency of their buildings or acquire highly energy-efficient properties.

From niche product to mass-market

The mutual benefits for banks and borrowers mean energy efficient mortgages have the potential to revolutionise the standard of millions of Europe's buildings – but only if they become a mainstream offering; available from every bank, for every borrower.

Growing the market to this scale will require strong consumer demand and a clear business case for banks to offer such products. Investors, policy makers and financial regulators can provide further incentives to support the market. Each of these stakeholder groups needs to be confident that energy efficient mortgages will deliver demonstrable impacts toward achieving climate change, energy and risk related goals.

Our proposals to ensure a win-win outcome

Central to the design of energy efficient mortgages, is establishing criteria for measuring buildings' energy performance, the focus of this report. The criteria we propose have been developed to deliver the risk reductions and wider benefits that different market actors expect and to ensure that energy efficient mortgage products are fit for purpose.

They are shaped by our extensive research and with the input of more than 500 experts across Europe. They are currently being tested by 37 major European banks as part of the Energy Efficient Mortgages Initiative pilot scheme.

Criteria have been proposed in three key areas:

- Energy performance thresholds for compliance
- Ongoing performance monitoring requirements
- Quality assurance requirements regarding works undertaken

1. Energy Performance

An Energy Performance Certificate¹ (EPC) showing:

a. Nearly Zero Energy Building (NZEB)² compliant

OR

b. 20% better than current regulations

OR

c. 30% improvement³

2. Ongoing Performance Monitoring

a. Actual consumption (meter readings using smart meters where available)

b. Revised EPC³

(For the purpose of loan performance assessments)

3. Quality Assurance

a. Planned and carried out by qualified/accredited professionals

b. Planned to prevent 'lock-in' ie future improvements are not made more difficult/expensive

c. Documentary evidence of work undertaken

- 1 – EPCs only valid if calculation inputs have been verified during a site visit
- 2 – NZEB – The EU Energy Performance of Buildings Directive requires all new buildings to be NZEB compliant, where NZEB performance levels are defined by each member state based on cost optimal levels.
- 3 – For renovations

Our three principles for the criteria:

- They are simple and flexible, built on existing tools and approaches already available in most EU markets.
- They set minimum requirements for the pilot that will remain under review as the market matures.
- They should remain sufficiently ambitious as a benchmark to deliver performance improvements that are aligned to global climate change goals and deliver meaningful risk reductions.

Implementing the proposals

Two leading businesses in the pilot, a bank and an energy company, together representing some 30 million European customers, are already working with our criteria and have demonstrated that they provide clarity for the market about what level of energy performance to aim for. Their case studies in this report also show that the criteria can be implemented without the need for major change to existing business processes.

The participants in the EeMAP pilot scheme are leading the way and, by sharing the lessons they learn, we will ensure an effective and attractive mortgage framework is created.

We have a vision of a future where easy access to energy efficient mortgage products facilitates the renovation of millions of buildings across Europe. With the support of all stakeholders across the finance, energy, property and policy sectors, we can make this happen.

Achieving the Vision: summary of our call to action

World Green Building Council's Europe network calls on the following stakeholders to take immediate action to accelerate the growth of the energy efficient mortgage market:

Banks and Investors	Building Sector and Energy Companies	Governments
<ul style="list-style-type: none">• Pilot our criteria to test how they can be applied within your business• Share lessons learned and loan performance data to help refine the criteria over time• Partner with the building sector and energy companies to streamline delivery to the consumer• Make energy efficiency part of every mortgage conversation with borrowers	<ul style="list-style-type: none">• Develop partnerships with pilot banks to streamline customer experience• Develop partnerships within the sector to keep assessment costs down• Train and educate the workforce to comply with our criteria;• Innovate to create improved delivery models for energy efficient renovations	<ul style="list-style-type: none">• Work with banks and Green Building Councils to understand how policy can play an enabling role.• Introduce policy incentives to drive demand• Develop 'building renovation passports' that can support phased, deep energy renovations of a building over several ownership cycles
All Stakeholders		
<ul style="list-style-type: none">• Communicate the benefits of energy efficient mortgages to the public		







1 — INTRODUCTION

OUR AMBITION FOR ENERGY EFFICIENT MORTGAGES

Greening our buildings will be at the centre of our fight against climate change, creating a more liveable and resilient society. Achieving this means finding the finance needed for improvements to our current and future building stock. Energy efficient mortgages are an exciting economic incentive and of growing importance in the sustainable finance space, where their potential to help address climate-related risks to property is increasingly being recognised. The World Green Building Council's (WorldGBC) Europe network is part of an EU-funded project to develop a common framework for energy efficient mortgage products, ensuring they achieve this ambition.

This report looks at a key part of the jigsaw for making energy efficient mortgages happen – establishing market standard energy performance criteria and an approach to measuring performance upon which lenders can base the mortgage. In establishing a common set of measurement criteria, we will define a product that will reduce risk for both borrowers and lenders, driving forward improvements to millions of buildings across the region.

1.1. Our vision

Buildings are at the heart of European society. We spend around 90% of our time in buildings – they are where we live, work, play, learn and



work. They are a cornerstone of Europe's economy, with mortgages accounting for over a third of the banking sector's assets – equivalent to half the EU's gross domestic product. The operation of buildings is also, however, a major contributor to our environmental footprint, responsible for over a third of carbon emissions and 40% of the total energy used in Europe. With 97% of the region's buildings deemed inefficient¹, reducing fossil-fuelled energy use in buildings through greater energy efficiency and renewable energy is therefore critical to tackling climate change and creating more sustainable, comfortable and healthier places for people, now and in the future.

Climate change, and the urgent need to both mitigate and adapt to its effects in the short and long term, is presenting new risks for building owners and mortgage lenders. These risks are: **financial**, such as the expected increases in the cost of energy to operate them and keep them comfortable; **environmental**, like more frequent extreme weather events; and **regulatory**, such as the introduction of higher energy performance standards, in response to environmental and economic drivers.

Reducing this exposure to risk should be a priority for both bankers and borrowers. The mutual benefits for mortgage lenders and mortgage holders of taking joint action to reduce these risks make energy efficient mortgages a powerful tool to improve the standard of Europe's building stock. Moreover, this will have far reaching consequences for Europe's energy and climate goals.

The energy demand of Europe's building stock will be reduced, supporting the sector to achieve deep levels of carbon emissions reductions and helping improve energy security. Energy efficient renovation rates, currently at levels far below what is needed to meet EU climate goals, can be increased significantly with wider benefits in terms of employment and investment in local SMEs and the 'real economy'². Businesses across the construction value chain, from designers and energy efficiency advisors, to product manufacturers and installers, will benefit from greater levels of finance flowing into the renovation market. Building occupiers will reduce energy costs through lower energy use and will enjoy higher levels of health and wellbeing in energy efficient buildings.

Our vision is to kick-start the growth of an energy efficient mortgage market that can facilitate the renovation of millions of buildings across Europe, and drive better energy performance in new-build, all with positive environmental, economic and social outcomes.

1 — http://bpie.eu/wp-content/uploads/2017/12/State-of-the-building-stock-briefing_Dic6.pdf

2 — For example, production of goods and services rather than investment associated with buying and selling on the financial markets

1.2. The project

The Energy Efficient Mortgages Action Plan (EeMAP www.energyefficientmortgages.eu) was launched in 2017 and aims to create a European energy efficient mortgage, to incentivise borrowers to improve the energy efficiency of their buildings or acquire highly energy efficient properties. The incentives that energy efficient mortgages will offer borrowers – such as reduced interest rates and/or increased loan amounts – aim to reflect the reduced credit risk of these loans.

In 2016-17, national Green Building Councils (GBCs) in WorldGBC's Europe network ran the EU-funded BUILD UPON project³. This brought together over 2,000 organisations to support national governments to develop national building renovation strategies, in accordance with EU energy efficiency laws. The project highlighted the key role that banks can play in financing the improvement of Europe's buildings and the need to engage the banking sector more actively.

At the same time, there is increasing political interest in sustainable finance and continued growth of demand for green investment assets. Energy efficient mortgages are seen as an exciting new class of asset to meet this demand and help fulfil political commitments to mitigate climate change.

In response to this, WorldGBC's Europe network helped to form the EeMAP project, together with:

- European Mortgage Federation – European Covered Bond Council (EMF-ECBC);
- Royal Institute of Chartered Surveyors (RICS);
- E.ON;
- Ca' Foscari University, Venice;
- Goethe University, Frankfurt.

This unique initiative brings together stakeholders from the green building movement, the financial sector and the valuation profession, along with some of Europe's top academic institutions, **to define a common European approach to energy efficient mortgages.**

The EeMAP consortium has developed a framework of guidelines for energy efficient mortgages – the *Implementation and Product Framework*⁴ – which is being tested under a pilot scheme involving 37 banks and more than 20 supporting organisations. The guidance in this framework is aimed primarily at lending institutions but also at

other stakeholders, such as energy efficiency advisors, contractors, energy companies and valuation professionals – anyone who could have a role to play in developing and delivering energy efficient mortgages for new and existing buildings.

1.3. This report

To achieve our bold vision for energy efficient mortgages in the long term, it is important to understand the various challenges that market actors face now and develop an approach that will help them overcome these.

The *Implementation and Product Framework* developed for the pilot scheme is made up of three main parts which each address different aspects of these market challenges:

- **Implementation Guidelines for Lending Institutions** – general guidelines on how to structure energy efficient mortgage products.
- **Building Performance Assessment Criteria** – for evaluating the energy performance of buildings as part of the origination of energy efficient mortgages.
- **Valuation and Energy Efficiency Checklist** – guidance for instructing and carrying out mortgage valuations in connection with energy efficient mortgages.

This report focuses on the second of the above – **the proposed building performance assessment criteria**. These market standard criteria will underpin energy efficient mortgages. They are a vital part of the development of these new financial products, defining what an energy efficient mortgage actually is.

WorldGBC's Europe network has led the technical workstream to define these criteria for the pilot scheme. This report explains the rationale and approach taken and places the proposals within the context of our long-term vision for energy efficient mortgages.

The report is aimed at banks and investors, national banking associations, the building sector, valuers, and national and local policy makers who want to understand how the building performance assessment criteria defined by WorldGBC's Europe network can help deliver the vision.

We hope this report and its recommendations will be championed by all stakeholders and will thus contribute to an effective sustainable financing model to drive the improvement of millions of homes and buildings across Europe.

3 — BUILD UPON was an EU Horizon 2020-funded project run by 13 Green Building Councils across Europe. See <http://buildupon.eu/>

4 — Available from: <http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/06/EEM-Pilot-Scheme-Implementation-Product-Framework-1.pdf>

2 — CREATING SUPPLY AND DEMAND

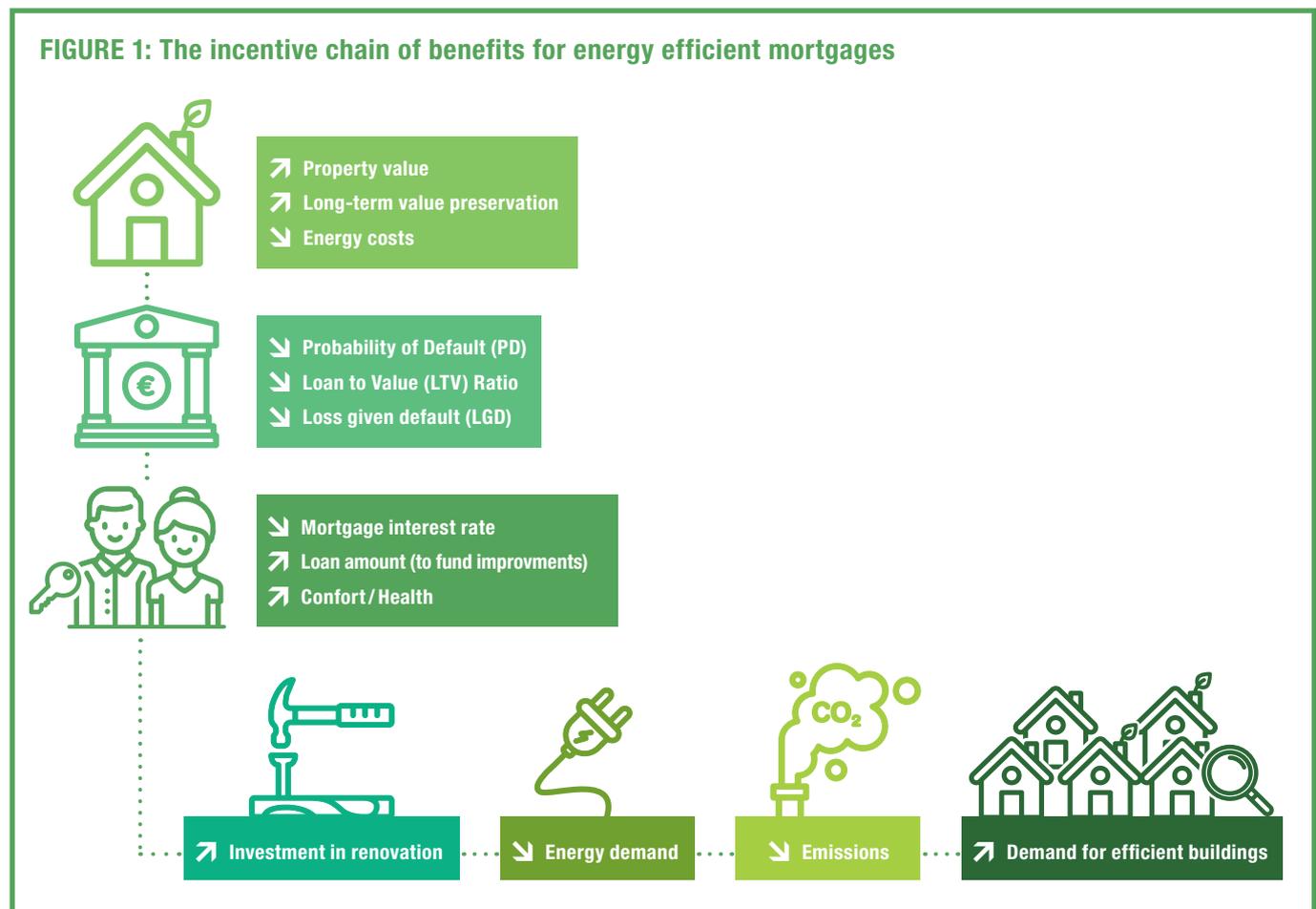
By driving the improvement of millions of buildings across Europe, energy efficient mortgages can bring benefits for building owners, mortgage lenders and wider society. To achieve this, the building performance assessment criteria that underpin them must be shaped by what these different market actors expect. This incentive chain of benefits that energy efficient mortgages can unlock is shown in Figure 1.

Understanding the consumers' perspective is key to ensuring that there will be enough demand for these products. Similarly, the needs of the supply chain must be taken into account. For lenders, it is critical that energy efficient mortgages lead to real risk reductions, meaning the interplay between energy performance of buildings and mortgage risk

must be well understood⁵. For the lender and the other parties involved in delivering these products to consumers, such as energy experts, valuers, designers and contractors, the mechanisms for demonstrating that criteria have been met must be simple and cost effective.

There are other market actors who can help to create the right conditions for energy efficient mortgages to succeed. They include investors, policy makers and regulators, who will need to have confidence that energy efficient mortgages are not simply a new form of 'greenwash'. To ensure their support, they must be convinced that these products really will be a key financial tool for implementing national, European and global policy goals on climate change.

FIGURE 1: The incentive chain of benefits for energy efficient mortgages



5 — <http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/04/EeMAP-Technical-Report-on-Building-Performance-Indicators-that-Impact-Mortgage-Credit-Risk.pdf>

2.1. Creating demand: the consumer perspective

The market demand for purchasing energy efficient mortgage products will come from homeowners and commercial property owners. For them, the benefits of taking an energy efficient mortgage over a conventional mortgage must be clear and compelling. These benefits would be, for example, lower energy bills, increased comfort, health and wellbeing, and higher quality, higher value properties that are fit for purpose and will remain so in a changing climate. In addition, the process of obtaining an energy efficient mortgage should be as straightforward as possible and the costs should not be perceived to outweigh the benefits.

It is essential to have a clear set of market standard building performance assessment criteria for energy efficient mortgages that are robust enough to deliver the benefits that customers care about. From the EeMAP consumer research we know that owners will expect their energy efficient mortgage to deliver on the above benefits. If the consumer is not confident that they will achieve these then demand may not be adequate to support market growth.

2.2. Ensuring reductions in mortgage risks

The other set of key players in the market will be the suppliers – banks and other mortgage lenders supported by energy and valuation experts, designers, construction companies and so forth. For lenders, energy efficient mortgages can be attractive as they achieve reductions in exposure to financial risk. However, to adopt energy efficient mortgages and to grow the market to the size required, these risk reductions need to be proven and long term.



EEMAP CONSUMER RESEARCH

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B2C Market Manager, E.ON

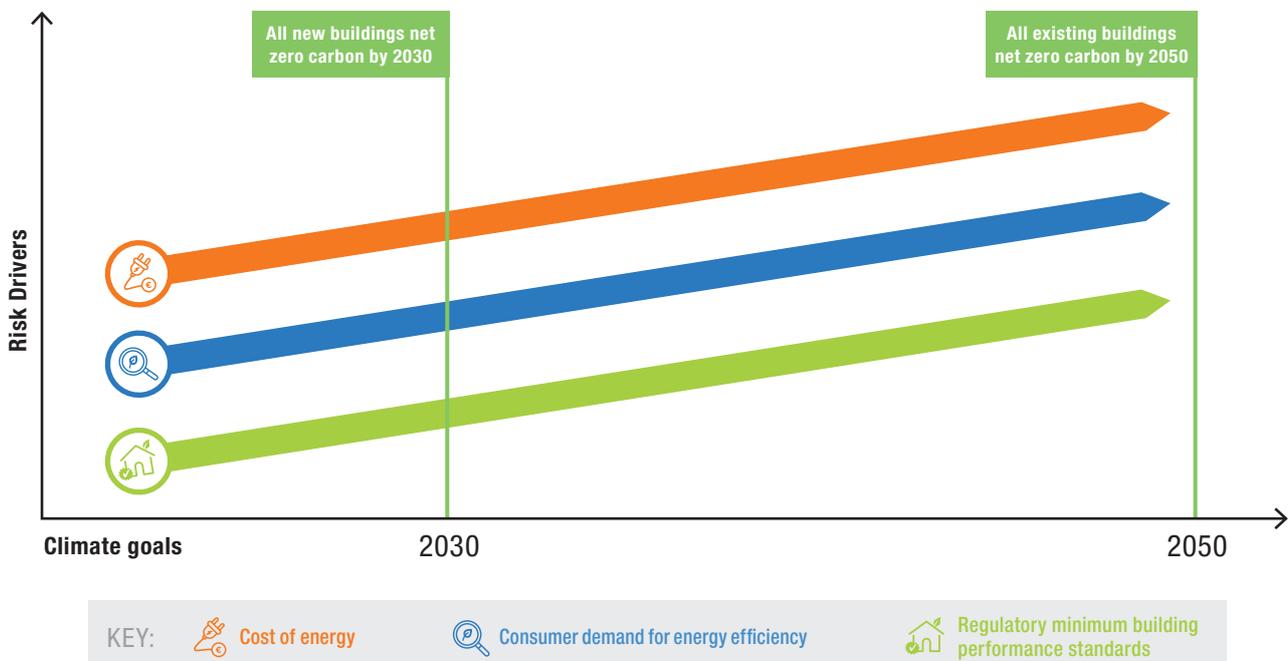
“The EeMAP consumer research, led by E.ON, uncovered key insights arising from Germany, Italy, Sweden and the United Kingdom. The results indicated a positive customer reaction to the concept of an energy efficient mortgage. In fact, the appeal of the concept is highest in Italy (80% very/quite appealing), followed by the UK (66% very/quite appealing), with very low outright rejection of the idea. Not surprisingly, the appeal is highest to those customers who are open to making energy efficiency improvements to their properties and to those that would consider taking out a loan to do so.

The single most important reason in all markets for finding the product appealing is the prospect of cutting the cost of the mortgage. Of almost equal importance is the prospect of bringing down energy bills, particularly in the UK and Italy. The emotional benefit of achieving a warm and comfortable home is a strongly recognised benefit in all countries.”

The full consumer research report can be accessed from:

http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/04/EeMAP_D2.7_E.ON_Final.pdf

FIGURE 2: Drivers of mortgage risks related to energy and climate change



The energy performance levels for obtaining energy efficient mortgages, defined in the building performance assessment criteria, must be set appropriately to deliver this risk reduction and to give clear guidance for other actors in the supply chain as to what performance standards are needed.

Risk reductions will be measured primarily through lower default rates, improvements in the loan to value ratio and reduced losses for the lender in the event of defaults. The climate change and energy related drivers of these risks are shown in Figure 2.

A changing climate will have real impacts on future building operating and maintenance costs, for example because more frequent extreme temperatures will increase the need for heating and cooling. On top of this, continued rises in energy costs will make borrowers more vulnerable to any economic shocks. If this is not addressed, it could lead to increasing mortgage default rates. It is therefore in the banking sector's interests to work together with consumers to increase the energy efficiency of mortgage portfolios and reduce the amount occupants need to spend on energy to maintain comfortable conditions.

On the other hand, as market standards improve with respect to energy performance, driven by regulation and consumer demand, the least efficient buildings may become less appealing, putting their value at risk compared to equivalent but more energy efficient properties. Research by the EeMAP consortium⁶ suggests that buildings that do not keep pace with standards – be they legislative or market-driven – are at risk of being devalued in the future (so-called “brown discount”) or even becoming stranded assets. Investing in green, highly efficient building stock will be a valuable risk mitigation measure for lenders.

In a mature market, energy efficient mortgages – and the criteria adopted to determine eligibility – should be a tool to help lenders tackle all these aspects of risks.

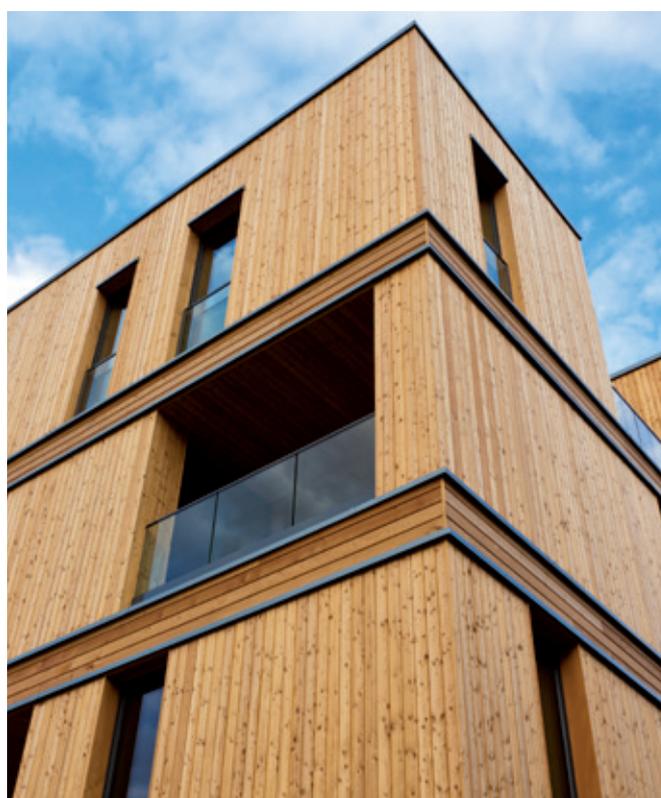
2.3. Convincing the market: the role and expectations of other market actors

Investors, policy makers and regulators can also potentially play a role in growing the market for energy efficient mortgages. To ensure their support, they must be convinced that these products really will be a key financial tool for implementing national, European and global goals on energy and climate change.

Growing demand from investors for ‘green assets’ means mortgage lenders that typically use the capital markets to raise finance will have a ready source of funding for energy efficient mortgages. Investors are increasingly looking for greater transparency and rigour in the way the positive impacts of green investments are quantified. Having a market standard definition of energy efficient mortgages with clearly defined building performance assessment criteria will help to provide this.

There are a number of policy measures and incentives that could help streamline the roll-out of energy efficient mortgages or increase their appeal to consumers, helping to secure demand. The EeMAP consumer research suggests that the most powerful of these may be fiscal measures such as reduced property transaction taxes or a subsidy to further reduce borrowing costs. To justify such measures, it must be clear that energy efficient mortgages are aligned with policy goals such as EU and national energy and climate targets.

Financial regulators have the scope to relax capital requirements⁷ for energy efficient mortgages, on the basis of their lower risk profile. This would create a further incentive for banks to increase the availability of these types of products. Such an intervention could be justified if there is clear evidence that energy efficient mortgages are helping to deliver real risk reductions.



6 — Available from: <http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/04/EeMAP-Technical-Report-on-Mortgage-Lending-Valuation-and-the-Impact-of-Energy-Efficiency.pdf>

7 — The minimum amount of capital that a bank must hold in reserve in relation to the size of its loan portfolio. These requirements are intended to keep the bank solvent in the event of a crisis and are directly related to the risk associated with the banks assets. A relaxing of these requirements for lower risk energy efficient mortgages would allow banks to do more lending.

3 — ESTABLISHING BUILDING PERFORMANCE STANDARDS

WorldGBC's Europe network has undertaken extensive research to develop and define building performance assessment criteria for energy efficient mortgages in a way that will meet the expectations of the different market actors discussed in Section 2. This research has involved consultation with hundreds of experts across the region. It has highlighted the opportunities for piloting energy efficient mortgages, in terms of building performance assessment tools and approaches that are available on the market now. It has also revealed the challenges in terms of tools that will need to be developed for the market to reach scale and deliver against policy goals in the long term.

3.1. Our research approach

Understanding what tools for building performance assessment already exist in each country is key to defining the criteria for energy efficient mortgages. WorldGBC's Europe network has been leading the process to look into this in depth. Based on our research into current best practice, we developed an initial concept which we then market tested across Europe. This consultation involved the input of our expert advisory committee, comprising some of Europe's most respected organisations in the building and sustainable finance sectors. Working through our network of national GBCs and in collaboration with the

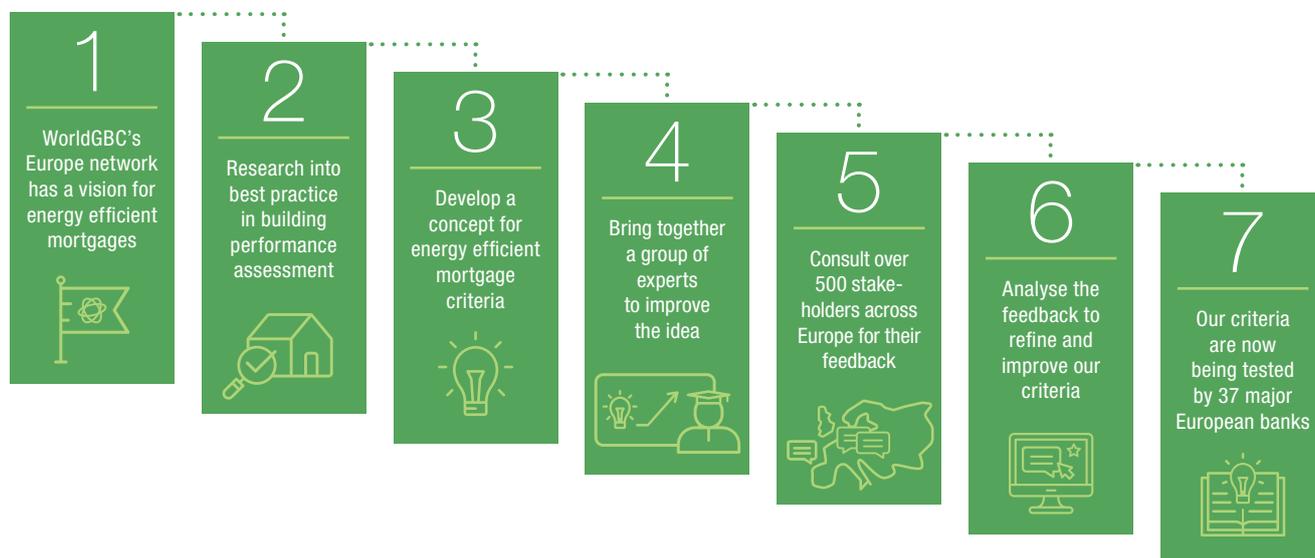
NATIONAL BUILDING PERFORMANCE BRIEFINGS

Ten detailed *Building Performance Briefings* were published by GBCs in February 2018, which describe existing 'infrastructure' in terms of current energy efficiency standards and assessment methods. They include, for example, details of the current energy performance levels of the national building stock, information about the national system of Energy Performance Certificates and how they can be accessed and other relevant national tools or initiatives. The briefings are all available to download from www.worldgbc.org/green-mortgages.

other EeMAP consortium partners we collected further feedback from more than 500 national partners before finalising the proposals for the pilot scheme.

The outcomes of this research and consultation over the past two years have helped shape the building performance assessment criteria proposed for the pilot scheme (and presented in Section 4 of this report), highlighting a number of opportunities and challenges.

FIGURE 3: The process undertaken by WorldGBC's Europe network to develop and refine the criteria for energy efficient mortgages



3.2. Not reinventing the wheel: building on existing policies and tools

Our research found that there are existing opportunities – tools already available to use for assessing the energy performance of buildings.

Our 2017 report on *Building Performance Indicators that Impact on Mortgage Credit Risk*⁸ highlighted that there are common elements across Europe that can provide a valuable starting point. The most important of these tools are Energy Performance Certificates (EPCs), a requirement of EU legislation and hence present in every member state. There are also statistical tools for predicting energy performance, traditional and ‘smart’ meters to measure energy consumption, and voluntary certification schemes that assess a range of sustainability aspects such as energy, water, waste, air quality, and so on. Another key element of EU policy is the requirement for ‘nearly zero energy building’ (NZEB) standards⁹ to be developed and applied to all new buildings from 2020. Each member state is required to define its own NZEB performance levels according to a common set of principles.

This means that each market already has some common tools and standards in place for building performance assessment that mortgage lenders can work with to pilot energy efficient mortgage product lines.

3.3. Addressing missing policies and tools

Our research also identified a number of challenges that need to be overcome. The five we highlighted are: diversity between markets, a lack of data and the low availability of building renovation passports, energy performance guarantees and wider sustainability performance assessments.

To overcome these challenges, a pragmatic approach is required: building on what is available in most markets but with flexibility to work around the missing elements. **What is clear is that these initial proposals should remain under review and be revised as the pilot scheme progresses and the market starts to scale.**

► Diverse Markets

In our research we have found that even for the elements of building performance assessment that are common to each European market, there are differing approaches. Diversity in the way building performance is assessed in different markets and the different mechanisms available in each, means flexibility and simplicity in the way building performance assessment criteria are applied will be key.

► The Data Gap

Numerous studies have been carried out that show links between higher energy performance of buildings and lower mortgage risks – a key rationale

for supplying or buying an energy efficient mortgage. However, much of the evidence available comes from North America and a detailed EeMAP report¹⁰ on this subject concluded that ‘the topic at hand is still under-researched.’

A lack of robust data that is specific to Europe presents a challenge when determining what level of energy performance or performance improvement should be required to obtain an energy efficient mortgage. Setting the bar too high would limit the appeal for the consumer and restrict the growth of the market. On the other hand, setting the bar too low would, in many cases, result in only very small performance improvements being realised. In these cases, the consumer benefits and risk reductions for the lender would be marginal and hard to prove and the overall impact of energy efficient mortgages to deliver on policy goals would be greatly reduced. Ideally, based on the needs of the different market actors outlined in Section 2, the building performance assessment criteria would define performance levels that data shows will achieve tangible risk reductions.

Our proposals for the pilot are based on the evidence currently available and on the feedback and consensus of experts. The EeMAP consortium continues to explore options for building new datasets, which could provide a more robust evidence base. Moreover, the pilot scheme is a unique opportunity to generate new data to fill this gap. The Energy efficiency Data Protocol and Portal (EeDaPP) initiative¹¹, launched by EMF-ECBC as a complement to EeMAP, will develop a means of recording this data, which will be made accessible via a common data portal.

► Building Renovation Passports

The latest update to the EU’s Energy Performance of Buildings Directive (EPBD) proposes that member states consider developing building renovation passports to enhance existing EPCs. Building renovation passports can improve the availability of data for valuers and lenders and ensure that any renovation works are planned and implemented in a technically sound manner. They include a long-term renovation plan or roadmap tailored to the building and the needs of the occupant¹². Such a plan can help the owner ensure that work they undertake now does not inadvertently make it more difficult, or more costly, to undertake further work in the future – a problem sometimes referred to as ‘lock-in’. Preventing lock-in is a key principle in helping to put buildings on a performance improvement pathway that is aligned to wider climate and energy goals. Consumer research¹³ undertaken by the EeMAP Consortium indicates that borrowers see the value of having a building renovation passport linked to the energy efficient mortgage but indicated that the concept has less appeal on its own without the link to such a financing mechanism.

However, there are currently only three passport pilots in existence in Europe and, whilst the EPBD encourages their development, the only requirement introduced is for a feasibility study to be conducted by the

8 — Available from: <http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/04/EeMAP-Technical-Report-on-Building-Performance-Indicators-that-Impact-Mortgage-Credit-Risk.pdf>

9 — <https://ec.europa.eu/energy/en/topics/energy-efficiency/buildings/nearly-zero-energy-buildings>

10 — Available from: <http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/04/EeMAP-Technical-Report-on-the-Impact-of-Energy-Efficiency-on-Probability-of-default.pdf>

11 — <http://eedapp.energyefficientmortgages.eu/>

12 — <https://ibroad-project.eu/about/at-a-glance/>

13 — Available from: http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/04/EeMAP_D2.7_E.ON_Final.pdf

European Commission. Without concerted action, it will be some time before these tools are widely available in all markets.

Therefore, the incorporation of building renovation passports into the criteria cannot be a prerequisite for the pilot. An alternative means of mitigating 'lock-in' will be needed and the availability of full passport or roadmap schemes needs to be subject to ongoing review.

► Energy Performance Guarantees

A key element in the continuing design of energy efficient mortgages will be to develop suitable mechanisms to ensure that the predicted performance (in the case of new-build) or performance improvement (in the case of renovation) is realised in practice. Perhaps the most robust solution is a full performance guarantee, whereby a contractor or other third party accepts some form of liability for the building's performance. These types of guarantees are sometimes offered on commercial property as part of an energy performance contract, but for the residential market there are very few examples in existence. The EU's Energy Efficiency Directive highlights energy performance contracting as an important mechanism for financing energy efficiency and the European Commission has funded research to promote their wider use¹⁴.

Making performance guarantees a prerequisite for energy efficient mortgages would be too onerous for the pilot and a simpler approach is needed to give the lender confidence that energy performance outcomes match expectations. One important consideration will be whether, for the purposes of monitoring lending risk, the performance is evaluated at the level of individual properties or on an average basis across portfolios.



THE VIEW FROM THE VALUATION SECTOR

Ursula Hartenberger
Global Head of Sustainability, RICS

“From a valuation practice perspective, there has clearly been progress, with ‘sustainability matters’ growing in importance in terms of market perception and influence. It is therefore essential that valuers and lenders take a wider view beyond energy efficiency and traditional value drivers, looking at more ‘intangible’ aspects such as: the potential impacts of – and on – climate change; configuration and design, including use of materials and concepts increasingly associated with health and ‘wellness’; accessibility and adaptability; building ‘intelligence’ and other ‘costs in use’.”

“Improvements in productivity, wellbeing, health and safety will become more important value and risk drivers. High performance buildings are ‘future proofed’ against the risk of rising energy costs, changing market preferences and tightening environmental regulations. By the

► Wider sustainability performance assessment

The evidence gathered during the EeMAP initiative shows that there is a strong case to be made for expanding the criteria for energy efficient mortgages to incorporate wider sustainability performance aspects. Aspects of building performance such as indoor air quality, access to daylight and green space or availability of sustainable forms of transport are often much stronger drivers of property value and their incorporation could have a greater risk mitigation effect for lenders than energy performance alone.

These wider issues are also important for investors and already commonly addressed in green and sustainable bond frameworks. Increasingly bond issuers are looking to demonstrate that their frameworks align with global sustainability goals such as the 2015 Paris Agreement¹⁵ and the United Nations Sustainable Development Goals (SDGs)¹⁶.



same token, properties not meeting future performance standards will likely suffer from lower liquidity and rental rates, higher long-term risks with greater potential capital expenditure requirements, resulting in decreasing value or so-called ‘brown discounts’ – all of which currently still appears to be omitted from mainstream valuation considerations and mortgage underwriting practices.”

“Access to consistent and comparable building information data, as captured by the proposed building passports, is essential for valuation and property professionals in order to provide banks with robust advice and facilitate informed lending decisions. By collecting building information and related data in a consistent way, we will finally be able to develop the market evidence to demonstrate the positive relationship between building performance, economic value and lending risk.”

14 — For example, the European Energy Service Initiative 2020 (EESI2020). More information can be found in the EESI2020 final report available from: http://www.codema.ie/images/uploads/docs/EESI2020_brochure_EN_final.pdf

15 — The Paris Agreement was signed in 2015 by 195 nations under the United Nations Framework Convention on Climate Change (UNFCCC), agreeing to keep global average temperature rise to well below 2°C and agreeing measures on adaptation and climate finance. The agreement officially comes into force in the year 2020.

16 — <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>



For example, Caja Rural de Navarra's sustainable bond framework¹⁷, described in the case study in Section 4.3, addresses sustainable cities and communities (SDG 11) and consumption and production (SGD12), in addition to affordable and clean energy (SDG 7).

Achieving the goals of the Paris Agreement will require all buildings to be zero carbon by 2050 and WorldGBC's global campaign, Advancing Net Zero¹⁸, promotes this target. Net zero carbon is a different kind of target from the EU's NZEB goal, but the two may be aligned over time (see Footnote 23 on page 19 for more details). At the 2018 Global Climate Action Summit, the campaign launched a commitment for businesses and governments to sign to signal their ambition to ensure all new buildings are net zero carbon by 2030 and all existing buildings by 2050. The Climate Bonds Initiative also offers certification for bonds¹⁹ that finance investments in decarbonisation that is aligned with the Paris Agreement. Their certification covers a wide range of sectors, including buildings.

Wider sustainability performance of buildings can be assessed using voluntary sustainability certification schemes²⁰. These schemes are increasingly common in the commercial property sector and several have or will soon have mechanisms to demonstrate compliance with WorldGBC's Net Zero Carbon commitment. Assessment tools for the residential sector have been developed in several European countries but are generally less widely available.

Due to their wider scope, these voluntary sustainability assessments are more complex and therefore often more costly than assessments only focussed on energy such as EPCs. Moreover, the lack of assessment tools for residential properties in many markets and a lack of harmonisation between the different voluntary schemes that do exist make it difficult to incorporate these wider issues into the building performance assessment criteria for piloting energy efficient mortgages.

The European Commission's new 'Level(s)' framework²¹ for sustainable building performance reporting is intended to further standardise the metrics and approaches used to assess these wider issues. Level(s) standardises the approach to performance assessment on emissions, resource and water efficiency, health and comfort, resilience and value/cost. The suitability of Level(s) and other schemes to form the basis of criteria and assessment for a more comprehensive 'green mortgage' framework should remain under review.

For markets where these voluntary sustainability certifications have become standard practice, mortgage lenders are encouraged to utilise these schemes for energy efficient mortgages. They can work with the certification scheme operator to ensure the core EeMAP building performance assessment criteria we are proposing are also complied with.

17 — https://www.cajaruraldenavarra.com/cms/estatico/rvia/navarra/ruralvia/es/particulares/informacion_institucional/galeria_descargas/Sustainalytics-CRN-Second-Opinion.pdf?exp=TRUE

18 — See: <http://www.worldgbc.org/advancing-net-zero>

19 — See: <https://www.climatebonds.net/certification>

20 — For more information see: www.worldgbc.org/rating-tools

21 — For more information see: <http://ec.europa.eu/environment/eussd/buildings.htm>

4 — ACHIEVING THE VISION: PROPOSALS FOR THE PILOT SCHEME

For energy efficient mortgages to contribute significantly to the transformation of Europe's buildings they must meet the expectations of the market, delivering tangible benefits for the building owner, real risk reductions for the lender and demonstrable progress towards achieving climate and energy policy goals. A clear and straightforward set of building performance assessment criteria that represent a market standard for the sector will help accelerate availability and take-up of energy efficient mortgages.

Below we describe how these requirements have been translated into a proposed set of building performance assessment criteria to be tested during the pilot scheme. They will provide consistency, clarity and flexibility and thus underpin the design and operation of energy efficient mortgages.

We also provide two further key resources for market actors and decision-makers to support the implementation of these criteria. Firstly, in section 4.2 we look at ten key EU markets and show which tools are already available for implementing the criteria. Secondly, the case studies in section 4.3 showcase organisations that have begun to apply the criteria in an operational setting – and the lessons we can learn from these market leaders.

4.1. Our proposed building performance assessment criteria

Set out below are the proposed building performance assessment criteria to be used by mortgage lenders to determine eligibility for an energy

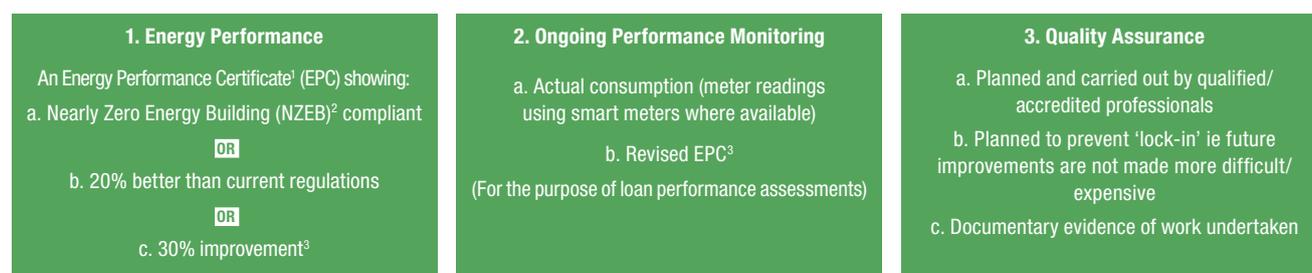
efficient mortgage. This framework will be tested in the pilot phase of the EeMAP project. The criteria have been developed by WorldGBC's Europe network from research conducted by the EeMAP consortium and with the input of more than 500 experts across Europe through national workshops or online consultation.

► Our approach

The proposals are based on:

- **What is both available and possible in most markets.** They rely on existing market standards and assessment tools in order to ease implementation and to circumvent the difficulties posed by the different climatic conditions and building types found in each market.
- **The need for simplicity and flexibility.** Lending institutions testing the energy efficient mortgage framework may apply them in a way that is appropriate for a given market.
- **Setting minimum requirements for the pilot.** They are not intended to preclude the application of more rigorous standards in those markets where lenders and other market actors deem this to be appropriate.
- **The assumption that they remain under review.** They are intended to provide clarity for this early stage in the market development of energy efficient mortgages but will need to be revised and updated as the market matures. Over time the level of ambition should align with national, European and global energy and climate goals.

FIGURE 4: Overview of the requirements for the three sets of building performance assessment criteria proposed for the energy efficient mortgages pilot



1 – EPCs only valid if calculation inputs have been verified during a site visit

2 – NZEB – The EU Energy Performance of Buildings Directive requires all new buildings to be NZEB compliant, where NZEB performance levels are defined by each member state based on cost optimal levels.

3 – For renovations

The building performance assessment criteria are summarised here with additional explanation of the underlying rationale. The full text of the criteria can be found in the Implementation and Product Framework²² (the Framework).

The criteria cover three key areas:

- energy performance thresholds for compliance
- ongoing performance monitoring requirements
- quality assurance requirements for works undertaken

It is proposed that the mortgage lender would apply all of these to determine eligibility for an energy efficient mortgage. The requirements under each section are shown below in Figure 4.

In the *Framework* the criteria are accompanied by a set of *General Definitions*, to provide further clarity on interpretation. The table below summarises what evidence could be used to demonstrate compliance with each of the three parts of the criteria. It also provides a brief explanation of the rationale underpinning the criteria.



22 — Available from: emap.energyefficientmortgages.eu/wp-content/uploads/2018/06/EEM-Pilot-Scheme-Implementation-Product-Framework-1.pdf

TABLE 1: Explanation of the building performance assessment criteria proposed by WorldGBC’s Europe network for the EeMAP pilot scheme

	Compliance Evidence	Compliance Level Required (Threshold)	Rationale
CRITERION 1: Energy Performance	<p>Energy Performance Certificate (provided this shows the calculated, delivered energy and has been completed based on evidence gathered during a site visit).</p> <p>If a compliant EPC is not available, then another calculation of delivered energy may be used provided it is compliant with European standards.</p>	<p>New-build: Compliant with national standard for Nearly Zero Energy Buildings (NZEB)²³.</p> <p>Alternatively, 20% better than required by current national building regulations.</p> <p>Renovation: Minimum 30% improvement.</p>	<p>EPCs are widely available in most markets and adopting them will help keep transaction costs low. It may also help drive quality improvements in national EPC schemes over time.</p> <p>NZEB standards are set by member states based on cost-optimality²⁴. Therefore, they already account for national specificities in terms of climate and building typology.</p> <p>However, as member states have progressed at different rates with defining NZEB, an alternative threshold is also proposed for new buildings.</p> <p>For renovations, the aim is to incentivise the borrower to go beyond ‘minor’ interventions, which typically achieve up to 30% improvement in performance. Such minor works may not achieve a meaningful risk reduction. It is anticipated that the lender would offer a sliding scale of improved loan conditions if the borrower achieves more than 30% improvement.</p>
CRITERION 2: Ongoing performance monitoring	<p>Smart-meter readings for each fuel type plus revised EPC (in the case of renovations).</p> <p>Manual meter readings will be accepted provided they have been taken monthly.</p>	<p>Metered energy consumption to be reported annually to the lender or their nominated third party.</p> <p>A revised EPC should be provided upon completion of a renovation.</p>	<p>Improving the available evidence for linking building performance (ie energy use and costs) and loan performance (i.e. default rates) is crucial to the long-term development of the energy efficient mortgage market.</p> <p>Having access to this ongoing performance data will allow the lender to assess the impact of their energy efficient mortgages both on loan performance and on environmental impacts. They can use this in sustainability reporting.</p> <p>By providing this data to the EeMAP consortium, in anonymised form, a common European dataset demonstrating the link between building performance and loan performance can be developed and used to demonstrate the case for improved capital treatment of such loans.</p>
CRITERION 3: Quality assurance	<p>Documentary evidence provided by professionals and/or contractors carrying out works that impact on energy performance.</p>	<p>The professionals and/or contractors must demonstrate that they have the necessary nationally recognised accreditation or qualification to undertake the work. These could be safety certifications such as GasSafe²⁵ in the UK, or certification of specialist expertise, such as the French <i>Reconnu garant de l’environnement</i> (RGE) scheme²⁶ which recognises energy and environmental expertise in construction sector professionals.</p> <p>They must also demonstrate that, in the planning stage, consideration has been given to potential future energy efficiency improvements to ensure the cost or technical feasibility of these is not negatively affected by the work. Finally, they must demonstrate that the works have been carried out as planned and, in the case of renovations of existing buildings, provide a revised EPC.</p> <p>The borrower shall retain this evidence and make it available to the lender on request.</p>	<p>Ensuring that the works have been planned and implemented according to best practice and professional standards is crucial to ensuring that the desired outcomes of both improved energy performance and reduced risk are achieved.</p> <p>The requirements proposed here build on existing national accreditations to keep costs to a minimum.</p> <p>Including a requirement relating to the consideration of future improvements will help ensure that the works do not inadvertently create a ‘lock-in’ effect where the property cannot be improved further. This is key to ensuring that long-term risk reduction can be achieved. It also provides an interim step towards requiring a full building renovation roadmap as part of a building energy passport scheme.</p>

23 — The NZEB approach follows a similar principle to WorldGBC’s definition for Net Zero Carbon (NZC) buildings because both prioritise high levels of energy efficiency. However, while NZEB focusses on energy consumption, the NZC definition applies the metric of carbon emissions, which is the most relevant means of measuring climate change impact. NZC also goes a step further by ensuring carbon neutrality for the building; NZEB stops short of requiring zero or net-zero energy consumption, simply promoting high levels of efficiency instead. The timeline for NZEB is more ambitious, with all new buildings in the EU required to be NZEB from 2020 onwards, whereas WorldGBC has called for NZC for new buildings by 2030. The two definitions are therefore not conflicting and can be complementary if they are aligned over time.

24 — The 2010 update of the EU’s *Energy Performance of Buildings Directive* introduced a requirement for member states to take total life cycle costs into account when setting any future energy performance requirements.

25 — For more information see: <https://www.gassaferegister.co.uk/>

26 — For more information see: <https://www.ademe.fr/entreprises-monde-agricole/labels-certifications/entreprises-batiment/comprendre-mention-reconnu-garant-lenvironnement> (French Language)

TABLE 2: Overview of available performance assessment tools and approaches in 10 EU countries for implementing the building performance assessment criteria proposed by WorldGBC's Europe network for the EeMAP pilot scheme

	Croatia	Finland	France	Germany	Ireland	Italy	Netherlands	Poland	Spain	UK
EPC scope matches EeMAP Energy Performance definition?	Yes ²	Yes	Yes	Yes	Yes ²	Yes ²	Yes ²	Yes ²	Yes ²	Yes ²
EPC register publicly available?	No	Yes	Yes ³	No	Yes	In some regions	Yes	No ⁴	In some regions	Yes
EPCs typically involve site visits?	No ⁵	No ⁵	Yes	Yes	Yes	Yes	No	No ⁶	No	Yes
NZEB definition exists?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
Smart meter roll-out under way?	No	Yes	Yes	Yes	No, due to start 2019	Yes	Yes	Yes	Yes	Yes
Feasibility of using national NZEB standards as threshold for new build	Green	Amber ⁷	Green	*	Amber ⁸	Green	*	Green	Amber ⁹	Amber ¹⁰
Feasibility of using 20% improvement in energy performance over current national regulations as threshold for new-build (if NZEB unfeasible)	Not applicable (N/A) because NZEB standard can be used	Amber ¹¹	N/A		Amber ¹²	N/A		N/A	Green ⁹	Green
Smart meter roll-out under way?	No	Yes	Yes		No, due to start 2019	Yes		Yes	Yes	Yes
Feasibility of implementing ongoing monitoring proposals?	Amber ¹³	Amber ¹³	Green		Amber ¹³	Green		Amber ¹³	Green	Amber ¹³
Experts available to plan and carry out renovations?	Yes: Based on Ordinance NN67/2017	Yes: Already a legislative requirement	Yes: <i>Reconnu garant de l'environnement</i> (RGE) scheme		Yes: Possibly using SEAI register ¹⁴ or forthcoming ECCoPro	Yes: Considered standard practice		Needs further clarification	Yes	Needs further clarification and must not exclude SMEs
Feasibility of implementing quality assurance proposals?	Amber ¹⁵	Green	Amber ¹⁵		Amber ¹⁵	Green		Amber ¹⁵	Amber ¹⁵	Amber ¹⁵

Notes:

Green indicates that the majority of experts consulted during the relevant national workshop judged that a particular criterion could be applied without amendment.

Amber indicates that the majority judged a particular criterion to be broadly appropriate with some minor adjustment needed to make it nationally applicable.

Red (not selected) would indicate major alteration to a criterion is needed.

* — Data not available as no EeMAP national workshop held

1 — New format EPCs only. EPCs issued prior to 2017 only include heating demand.

2 — EPC reports primary energy rather than delivered energy. However a conversion to delivered energy is possible.

3 — France introduced a national register in 2013. Any EPC issued before this date is not on the register.

4 — Only data for public buildings currently accessible from the Polish EPC register.

5 — According to regulations, EPCs should involve a site visit but in practice this is often not the case.

6 — The Polish government is currently trying to address this issue to ensure site visits do take place.

7 — NZEB definition came into force for new builds in January 2018 in Finland so this may not be ambitious enough.

8 — NZEB definition not thought to be ambitious enough in Ireland.

9 — In Spain, the NZEB definition has been aligned with current building regulation and therefore may not be ambitious enough. For Spain, an improvement of 20% against the current regulatory standard is therefore effectively an improvement of 20% against NZEB.

10 — NZEB not yet clearly defined in the UK and there are question marks over its relevance post Brexit.

11 — Thresholds may be better communicated if translated into energy performance bands (e.g. A rated EPC).

12 — 20% below current standards may be too onerous for the level of additional funding that a bank could realistically provide.

13 — Concerns expressed by some about the cost of data collection and whether banks would be able or willing to use this data. Another concern was how to address the lack of comparability between measured and calculated energy performance.

14 — The SEAI register may require further development.

15 — Concerns expressed by some that aspects of the quality assurance requirements could be too onerous or too costly, particularly for residential buildings.

4.2. Applying the Criteria: The tools available in ten key markets

As described above, the proposed criteria for the pilot build on the existing tools and approaches to building performance assessment that are typically available across Europe. Below we summarise which of these elements are available in 10 European markets, where the national GBCs have been actively supporting the EeMAP initiative with market intelligence and expertise. This summary shows that in most countries, based on the consensus of the national experts consulted, the proposals can feasibly be implemented using tools that are currently available. In some cases, minor adjustments and adaptations may be needed to account for a specific national situation. The data is taken from the work of the GBCs and from previous EeMAP reports.

4.3. Case Studies: How market leaders are already applying the criteria

While a market for energy efficient mortgages has enormous potential to deliver benefits to both lenders and borrowers, understanding of these benefits within the financial sector currently remains low. However, the banks and supporting organisations participating in the EeMAP pilot are leading the field in the design of energy efficient mortgages. Specifically, they are testing the criteria to see how these products can operate in practice in the market. Their experiences will provide useful lessons to others embarking on this journey.

The two companies presented as case studies below are major players in the energy and financial sectors within the markets in which they operate. Together they represent nearly 30 million customers throughout Europe. They have taken a particularly proactive approach and set a clear example that can be followed by others during the pilot and beyond.

► CAJA RURAL DE NAVARRA – Applying the EeMAP criteria to sustainable bonds

Caja Rural de Navarra (CRN) is a medium-sized co-operative bank operating in northern Spain. An active supporter of the energy efficient mortgage initiative from the outset, CRN is one of three Spanish banks in the pilot scheme of the EeMAP initiative.

CRN has been actively involved in sustainable finance for many years and in 2016 became the first bank to issue a sustainable covered bond²⁷. However, at that time their bond framework did not include energy efficiency investments in the building sector due to a lack of data. Through CRN's involvement in EeMAP the bank has now initiated a process to tag their mortgage portfolio according to energy performance and were able to incorporate energy efficiency as a sub-category of the sustainable bond framework for the first time. In 2018 CRN issued a €500 million sustainable covered bond using this updated framework, which was significantly oversubscribed.



Miguel Garcia De Eulate
Director of Capital Markets,
Caja Rural de Navarra

“In our view, one of the greatest environmental impacts that we can offer as a retail and cooperative bank is represented by the physical collateral which underlies our mortgage origination business. In the EU 75-90% of the building stock is predicted to still be standing in 2050 making energy efficient refurbishment and energy efficient mortgage financing a top priority for Europe. The commitment of retail banks to identify, tag and promote greener residential mortgages is key to reducing CO₂ emissions in Europe.”

“The engagement of CRN and other banks in the EeMAP initiative can be a relevant case study for other mortgage lenders in Europe, in order for the retail financial sector to make a significant contribution to a greener and more sustainable economy and also increase the awareness and alignment of European citizens to the EU sustainable and energy efficiency agenda.”

CRN's work to apply the EeMAP criteria to their loan portfolio for the purpose of covered bond issuance provides a clear example of what is currently possible and should serve as a very positive encouragement to other mortgage lenders to follow suit.

How are the pilot scheme criteria being put into operation?

In line with the General Definitions in the building performance assessment criteria in the Pilot Scheme²⁸, CRN will use Energy Performance Certificates (EPCs) as established in Spanish legislation²⁹ in order to evaluate the degree of energy efficiency (Criterion 1).

The main objective will be to focus on lending activities in either financing new buildings that must be among the best performing in terms of energy efficiency, or financing an appropriate upgrade in the efficiency of the existing building stock.

The definition of 'Nearly Zero Energy Buildings' (NZEB) in Spain is based on current legislation for minimum energy performance standards and is generally not considered very ambitious (see Table 2). For new buildings, CRN's "energy efficient buildings" sub-category has been aligned with the European Commission recommendation EU2106/1318³⁰ on NZEB performance levels. The sub-category only includes loans financing residential units (buildings, apartments or houses) that are the top performing in terms of energy efficiency. CRN has included only those units with "A" and "B" rated EPCs in its sustainable bond framework. Using the EPC bands was thought to be the easiest way to communicate the requirements to the borrower. This level of performance is also a common benchmark used in green and sustainable bond issuance.

27 — A covered bond is a form of debt issued by a bank or mortgage lender, which is backed by an asset pool. If the issuer fails, the assets can cover any claims. Mortgage funding raised on the capital markets typically takes the form of covered bonds. A sustainable covered bond is one that includes both environmental and social positive impacts within its use of proceeds.

28 — Available from: <http://eemap.energyefficientmortgages.eu/wp-content/uploads/2018/06/EEM-Pilot-Scheme-Implementation-Product-Framework-1.pdf>

29 — Directive 2010/31/UE and Spanish Royal Decree 235/2013 which set out the requirement for EPCs from 1st June 2013

30 — Available from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32016H1318>

For existing residential units (completed before 1st June 2013), this sub-category only includes loans for properties that, after retrofitting, have achieved at least a 30% improvement in energy performance, leading to an EPC of “C” or better. CRN will also include those loans granted to owner communities of residential blocks (“Comunidades de Vecinos”) to implement new insulation and/or replace central heating, leading to an EPC “C” or above for the whole building.

Any upgrade from “G”, “F”, “E” or “D” to the “C” category involves an improvement of at least 30% in energy efficiency (and this also represents an improvement of 30% compared to the region’s housing stock average).

To what extent have current business processes been adapted?

With EPC data either not publicly available in many countries or not included in banks’ systems, most bond issuers have used other building certification data or building regulations as a proxy for energy efficiency. Some European banks, for example, issued green covered bonds in 2018 with residential mortgages as underlying assets, but using the year of construction of the property as a “short-cut”.

The EeMAP criteria require energy performance to be demonstrated using EPCs. CRN’s process of sourcing EPC data directly involves three work streams: mortgages of individual properties where CRN financed the real estate development (CRN may therefore already have the relevant data) from the developer; existing mortgages not included in group 1; and new origination.

EU EPC legislation was implemented in Spain in 2013 and some €150 million of lending for which CRN has EPCs has already been identified in the first work stream.

The second work stream requires innovative IT tools to be deployed as existing databases on EPCs cannot be easily matched to the mortgage book of the bank. That is why CRN is exploring advanced algorithms able to find reliable solutions.

What next steps will CRN take?

CRN intends to build on the work described above by asking regional governments for existing EPC data and designing new processes in order to capture EPCs in new mortgage origination. This will be a key next step on the journey towards developing a full energy efficient mortgage product offering.

► E.ON – Strategic partnerships can streamline the pilot process

E.ON is an international, privately owned energy supplier based in Essen, Germany, with three core businesses—energy networks, customer solutions, and renewables – serving 22 million customers across Europe. E.ON is a partner in the EeMAP consortium and is a long-standing supporter of Europe’s Green Building Councils, helping to establish WorldGBC’s Europe network in 2012.

E.ON joined the EeMAP consortium because it recognises that this market-led initiative has real transformational power: creating an



Michael Lewis
CEO, E.ON UK

“Millions of homeowners are missing out on cost savings, higher property values, and more comfortable homes because of a lack of easy-to-access, affordable finance to invest in energy efficiency improvements.”

“This is why E.ON firmly believes that energy efficient mortgages have the potential to be a game changer in the delivery of affordable finance and we are ready to meet the challenge for home-owners motivated to take the step into energy efficient living.”

“Easier access to affordable financing via an energy efficient mortgage should provide an added incentive for customers to better insulate buildings, replace old heating systems or increase their energy independence through solar panels, batteries or virtual storage. It is also intended to ease the purchase of existing energy-efficient houses or commercial buildings through preferential financing in conjunction with a mortgage.”

incentive chain that works for all market actors and, most importantly, customers. Right from the start of the project E.ON has been committed to making sure that the energy efficient mortgage concept appeals to customers and has taken the lead on the project’s consumer research.

As the only European energy company currently involved in the EeMAP pilot, E.ON is working to develop strategic partnerships with banks that can give customers a seamless energy efficient mortgage experience. This case study serves as a compelling example of how such collaboration across the market can streamline all elements of delivering energy efficient mortgages.

How are the pilot scheme criteria being put into operation?

E.ON sees itself as a specialist energy partner to customers, delivering a one-stop-shop customer experience ensuring that both lender and borrowers can be assured of a high-quality, energy efficiency outcome.

The energy performance criteria in the pilot scheme offer a useful framework within which interested market players can innovate, whilst ensuring the results of their pilots can be compared. For E.ON the criteria provide a framework to leverage its energy expertise and organisational capabilities to offer customers a ‘managed renovation experience’. Practically, this experience would involve E.ON taking care of assessing which energy efficiency improvements would drive the greatest energy cost savings for the customer’s home, packaging the energy saving options, installing them at a time which suits the customer and offering energy services to help the customer realise the expected cost savings.

The pilot criteria helpfully sets out what good should look like from an energy efficiency perspective. This enables E.ON as a business to design bundled offerings for customers that will help them to meet an energy performance level which would enable access to more affordable

finance under the energy efficient mortgage product. Put simply, the pilot criteria tell E.ON what it is aiming for in terms of outcomes.

To what extent have current business processes been adapted?

For E.ON to provide the ‘managed renovation service’ described above there are only minor adaptations required to existing business processes. E.ON already installs a range of customer solutions into customer homes, either through Government-driven energy efficiency initiatives for vulnerable customers or, for example, for customers seeking to buy their own solar panels or batteries. E.ON has the systems, processes, manufacturer relationships and delivery capabilities already in place. The key task will be working with banks who wish to partner with E.ON as a preferred supplier for a ‘managed service’ to create an appealing customer journey and proposition package.

E.ON is already offering energy solutions and services to more than 22 million EU citizens across its seven market regions, meaning it is well positioned to enable banks to deliver an innovative and compelling energy efficient mortgage customer experience aligned with the EeMAP criteria.

What next steps will E.ON take?

The pilot phase presents a great opportunity for experimentation and cooperation to find the right energy efficient mortgage product formula for consumers. The EeMAP consumer research (see Section 2.1 on page 11), led by E.ON with support from research agency BASIS, has already shown there is demand and E.ON is committed to participating in the pilot.

Access to affordable financing via an energy efficient mortgage should provide an added incentive for customers to improve their homes. For

E.ON this is highly relevant because the business has shifted from a traditional utility model to that of an energy solutions provider. E.ON’s focus is therefore to enable customers to live more sustainably, lower their energy bills and increase their participation in the energy system through such technologies as solar and battery solutions.

E.ON is actively looking to collaborate with banks who have also signed up to the pilot scheme. Such strategic collaborations offer the opportunity to have real impact for people, the planet and future profitability. E.ON is also committed to working with governments and other key EU institutions to scale up an exciting new mortgage market.

LESSONS LEARNED FROM THE FRONT-RUNNERS

Both of the case studies – from a lender and an energy provider – show how the criteria developed by WorldGBC’s Europe network for the EeMAP pilot can be implemented now without the need for major change to existing business processes.

They provide clarity for the market about what level of performance to aim for when first setting up energy efficient mortgage products.

Moreover, replicating the cross-sectoral approach taken by EeMAP to develop the pilot scheme framework, and the criteria that are part of it, can streamline the development and deployment of these products. Strategic collaborations between banks and businesses with expertise in energy and energy efficiency offer a promising recipe for success.

5 — KEY NEXT STEPS

We have seen that there is a clear rationale for the creation of an energy efficient mortgage market in Europe and we have considered how we might define a mortgage product to drive uptake and growth. Central to this are the proposals we have presented in this report, after extensive research, for building performance assessment criteria, to assess eligibility.

We conclude with an overview of next steps. Firstly, what we can do – the areas where the EeMAP consortium, and WorldGBC's Europe network in particular, will be carrying out further work to define the project and support market growth. And secondly, a call to action to other stakeholders – our recommendations to all players in this new market: banks, the building sector, energy companies and government; for how they can play their part in ensuring every building owner in Europe has access to an energy efficient mortgage for their property.

5.1. Next steps for our research

We will continue to work on improving the building performance assessment criteria over time, to ensure they remain fit for purpose. Much of this work will involve analysing the progress of mortgage lenders and others participating in the pilot. We will also look to develop and strengthen the support that is available at national level to help establish energy efficient mortgages in particular markets. Where our research to date has highlighted challenges, such as the low availability of building renovation passports, we will conduct further analysis into how these can be developed to support the growth of the energy efficient mortgage market. Finally, we will use the power and reach of WorldGBC and our regional networks in Europe and beyond to stimulate demand by communicating the benefits of these products have for people, prosperity and the planet.

► The pilot scheme and how we can learn from it

The EeMAP pilot scheme³¹ was launched on 14 June 2018. Thirty-seven banks in thirteen countries and national associations representing mortgage lenders in Belgium, Denmark, Germany and Romania have committed to testing the framework of guidelines developed by the EeMAP consortium. They will seek to put the proposed framework into practice, including the building performance assessment criteria.

This operational testing and the feedback these pilot banks provide will be a hugely valuable source of information from which other lending institutions can learn. The EeMAP consortium, including WorldGBC's Europe network, will work alongside the piloting organisations to gather and analyse their feedback and ensure that the outcomes are taken into account in future development of the criteria for energy efficient mortgages.

► Establishing national support

WorldGBC's Europe network, together with national representatives of the finance and banking sector and the valuation profession, have begun to convene groups of national stakeholders across the three sectors of buildings, finance and valuation, to support the EeMAP pilot in their own markets. These groups have expertise to advise national market actors on how to implement the framework of guidelines.

Lending institutions, policy makers or other organisations that want to know more about the ways in which the building performance assessment criteria could be applied in a given country should contact their national GBC.

► Further research — Building Renovation Passports

As the pilot progresses and the participating banks move from initial feasibility assessments to a fully operational phase, it is important to continue looking ahead to how the vision for energy efficient mortgages set out in this report can be achieved. In the medium to long term, that may require developing and deploying some of the missing elements for energy efficient mortgages outlined in Section 3.3.

For the existing building stock in particular, **building renovation passports** will be a very important tool for improving energy efficient mortgages, as outlined in Section 3.3. The new EPBD already encourages member states to consider developing building renovation passports to supplement EPCs. It also requires the European Commission to conduct a feasibility study on their wider adoption across the region. Once available, these tools can provide a clear means by which to evaluate and demonstrate that a building is on a performance improvement pathway aligned with national, European and global carbon, energy and wider sustainability goals.

31 — <http://eemap.energyefficientmortgages.eu/pioneers/>



The EeMAP consumer research tested the appeal of building renovation passports and it was found that the idea makes sense to consumers as a tool to support the energy efficient mortgage but may not have wide appeal if not directly linked to a financial incentive such as this.

There are a number of other European initiatives that are developing and testing concepts for building passports and renovation roadmaps. These include the EU-funded iBRoad³² and ALDREN!³³ initiatives; and the Global Alliance for Buildings and Construction's Work Area 5³⁴, which covers building measurement, data and information is also looking at this topic.

Energy efficient mortgages represent a very important application of building renovation passports with potentially unique requirements. In the coming months, through to the formal end of the EeMAP initiative in April 2019, WorldGBC's Europe network will therefore conduct further research to answer key questions relating to this specific 'use case'. This work can then inform future initiatives, which are more directly focussed on developing and implementing operational tools.

Key questions to be investigated further are:

- At what stages in the energy efficient mortgage origination process would a building renovation passport (BRP) be required?
- Which actors in the energy efficient mortgage value chain would need access to the BRP?
- What information would actors in the energy efficient mortgage value chain require from a BRP and in what format should this be accessible?
- Do the existing pilot BRP schemes meet these requirements?

► Creating demand through awareness raising

Green buildings – and energy efficient mortgages as the tool to finance these - have demonstrable benefits for owners and occupiers. WorldGBC and its Europe network are actively investing in communicating the benefits of greener homes to consumers. This year our annual World Green Building Week focusses on promoting the many financial and lifestyle benefits that a green home can have. This global campaign, which last year reached 24 million people around the world, builds on a wealth of initiatives being undertaken by GBCs at national level, such as the development of the Home Performance Index³⁵ by the Irish GBC, the new Woonmerk³⁶ scheme from the Dutch GBC, or the growing number of residential buildings in France with an HQE sustainability certification³⁷ from Alliance HQE – France GBC.

As well as consumer-facing initiatives, GBCs have been highly successful at engaging policy makers in driving forward regulatory and fiscal measures to increase the demand for greener homes. In the UK, UKGBC released a major report on the benefits of renovation for urban regeneration and in 2016-17, 13 of Europe's GBCs jointly led the world's largest collaborative project on building renovation, called BUILD UPON, engaging more than 2,000 key stakeholders, including consumer groups and consumer-facing agencies, to create national renovation strategies.

WorldGBC is committed to ensuring green buildings are available for everyone, everywhere – and creating demand for energy efficient mortgages, through broad consumer engagement and political and corporate advocacy, will remain a key objective of our involvement with EeMAP in the future.

32 — <https://ibroad-project.eu/>

33 — <http://aldren.eu/>

34 — <https://globalabc.org/about-gabc/work-area/measurement>

35 — <http://homeperformanceindex.ie>

36 — <https://www.dgbc.nl/woonmerk>

37 — <https://www.behqe.com/offers/residential-building>

5.2. Our call to action for banks, industry and government

Our research has been detailed and extensive, culminating in a new set of market standard building performance assessment criteria that will be tested as part of the energy efficient mortgages pilot scheme. Now it is time to act, and enable energy efficient mortgages to become a key tool for transforming Europe's building stock. WorldGBC's Europe network calls on banks, the building and energy supply sectors and government, to join us in transforming financing for energy efficiency, with benefits for customers, climate, and the value chain delivering it.

Below we outline the key immediate and long-term actions that each group of actors can take, to play their part in ensuring every building owner in Europe has access to an energy efficient mortgage for their property.



► Banks and Investors

We call on banks and mortgage lenders and the financial sector to:

- **Pilot our criteria**, offering energy efficient mortgages to customers as quickly as possible, and testing how the criteria can be implemented across your mortgage business.
- **Share lessons learned from piloting** with WorldGBC's Europe network and the other partners in the EeMAP initiative so we can adjust and refine the criteria over time and develop appropriate guidance to accompany them.
- **Share loan performance data** with the EeMAP initiative, to develop evidence linking the energy performance levels defined in our criteria and the risk profile of buildings that meet them – this is vital to ensure the market continues to scale up.
- **Partner with the building sector** to establish national 'hubs' that bring together the expertise necessary to help establish a national market for energy efficiency mortgages, including expertise on finance, energy efficiency, valuation and marketing.
- **Make energy efficiency part of every mortgage conversation**, raising awareness with customers about the benefits of energy efficient buildings and helping drive increased demand for energy efficient mortgages.

► Building sector and energy companies

These sectors have a key supporting role to play in the successful growth of the energy efficient mortgage market and we call on key actors, such as architects, engineers, manufacturers, energy assessors, valuers and energy companies to:

- **Develop partnerships with pilot banks** that streamline and simplify the process of procuring energy efficient buildings, whether as new builds or renovations for both the lender and, most importantly, the consumer.
- **Develop partnerships within the sector** such as between energy assessors and valuers, which can help to simplify the assessment process for compliance with our criteria and hence minimise costs.

- **Train and educate the workforce** to understand how to plan, implement and document an energy efficient renovation or construction of a new building that complies with the criteria and meets the expectations of the customer and the bank in terms of quality and energy performance outcomes.
- **Innovate** to streamline energy efficient renovations through the development of new delivery models.

► Government

We call on national and local government to:

- **Work with pilot banks and supporting GBCs** to understand how policy can play an enabling role, removing barriers or introducing incentives that will help to grow the huge potential of the energy efficient mortgages market.
- **Introduce policy incentives to drive demand for energy efficient mortgages**, encouraging consumers to take up new energy efficient mortgage products through, for example, tax reliefs on the purchase of homes that meet the criteria. This use of public funds will help leverage the substantial power of the mortgage market to renovate the building stock, meeting climate targets and creating the other socio-economic benefits associated with urban regeneration.
- **Develop building renovation passports** in advance of the timelines proposed in current EU legislation. ensuring these also capture compliance with our energy efficient mortgages criteria. This will significantly streamline the process for banks to implement energy efficient mortgages, particularly for existing buildings.
- **Communicate energy efficient mortgages to the public** as part of existing public sector-led programmes to raise consumer awareness about home energy efficiency, connecting consumers with financial products that will help them take action.

With the support of all stakeholders across the finance, energy, property and policy sectors, we can transform Europe's buildings by creating a thriving market for energy efficient mortgages – allowing all stakeholders to reap the rewards of a highly efficient and low carbon built environment.

Project contacts

If you want to learn more about the energy efficiency workstream of the EeMAP initiative, please contact: europa@worldgbc.org

Contact your local Green Building Council

Organisations such as banks, valuers, utilities and building and construction companies looking to explore how an energy efficient mortgage could work in your local market can contact any of the national Green Building Councils that are officially participating in the EeMAP initiative. These GBCs have produced National Building Performance Briefings (see page 13) and led the market consultation process for the criteria presented in this report.

COUNTRY	MAIN CONTACTS	WEBSITE
Croatia	Dean Smolar	www.gbccroatia.org
Finland	Mikko Nousiainen	http://figbc.fi/gbc-finland
France	Anne-Sophie Perrissin-Fabert, Yona Kamelgarn	www.hqegbc.org/accueil
Germany	Christine Lemaitre, Daniel Häußler	www.dgnb.de/de
Ireland	Pat Barry, Marion Jammet	www.igbc.ie
Italy	Valentina Marino	www.gbcitalia.org
Netherlands	Martin Mooij	www.dgbc.nl
Poland	Alicja Kuczera	https://plgbc.org.pl
Spain	Bruno Sauer, Emilio Miguel Mitre	www.gbce.es
UK	John Alker, Richard Twinn	www.ukgbc.org

A full list of European Green Building Councils that are members of the World Green Building Council network can be accessed here: <http://www.worldgbc.org/our-regional-networks/europe>

EeMAP CONSORTIUM MEMBERS



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EUROPE REGIONAL
NETWORK



WORLD
GREEN
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COUNCIL



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