ENERGY EFFICIENT MORTGAGES: HOW TO COMPLY & ALIGN WITH THE EU POLICY AGENDA

NEEM HUB

Nordic Energy Efficient Mortgage Hub

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The Nordic Energy Efficient Mortgage Hub aims to scale-up lending to energy renovations in the Nordics and will publish a blueprint on how to accomplish this which will be implementable in other regions of Europe and, indeed, the world. In striving to increase energy renovations, the NEEM Hub will help achieve the targets of the European Green Deal and contribute to addressing ambitious national climate targets.

The NEEM Hub will be comprised of a long list of institutions from the financial sector, behavioural scientists, mortgage specialists and authorities, and digital technologies communities from across the Nordics, all guided by leading European Economics Consultancy, Copenhagen Economics.

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EXECUTIVE SUMMARY

In recent years, a comprehensive but complex regulatory and supervisory landscape has emerged around the concept of sustainable finance, as the EU authorities and Member State governments have realised that the scale of investment needed to achieve the EU's energy savings targets cannot be met by the public sector alone and that the EU financial sector will play a fundamental role in the climate transition, with positive spillovers for economic growth and job creation.

This landscape will have far reaching consequences for banks' entire value chains, impacting on their business models and strategies, governance structures and disclosure, and will require significant implementation efforts for the coming months and years.

In the first[1] of this series of two Reports, we identified and explored the key touchpoints between the EU regulatory and supervisory landscape and energy efficient mortgages, with a focus on the Energy Efficient Mortgage definition[2], Energy Efficient Mortgage Label[3] and the prudential treatment of energy efficient mortgages. This analysis concluded that the landscape presents very specific impacts and opportunities in relation to the development of energy efficient mortgages and, as a result, the key outputs of the Energy Efficient Mortgages Initiative (EEMI)[4] and the present Project, the Nordic Energy Efficient Mortgage Hub (NEEM). The analysis furthermore points to the fact that no part of banks' activities will remain untouched by these policy and legislative initiatives and actions, whether they be retail, funding or supervisory-related and draws particular attention to the most significant impact on banks' activities of this landscape, notably those which impact materially on the three pillars of the supervisory framework.

This analysis was intended as a precursor to the present Report which considers the challenges and opportunities faced by lending institutions in relation to energy efficient mortgages starting from a supervisory perspective and then moving on to retail and funding considerations. It offers detailed insights into the ways in which the multitude of market-led actions under the EEMI can provide a fast track to respond to the challenges of the regulatory and supervisory landscape and maximise the related opportunities, and provide lending institutions with the tools to increase the resilience of their loan books to climate change risks:

1 https://energyefficientmortgages.eu/wp-content/uploads/2022/01/Analysis-of-Regulatory-Supervisory-Landscape-relative-to-EEM-012.pdf
2 https://www.energy-efficient-mortgage-label.org/about-us/convention
3 https://www.energy-efficient-mortgage-label.org/
4 https://energyefficientmortgages.eu/

- A recurring theme from a supervisory and funding perspective is **ESG reporting and disclosure** to market participants, whether these be regulatory authorities or investors, for example. This will require huge efforts from lending institutions to understand specific data requirements, identify potential data sources, benchmark their existing loan portfolios against the requirements, address gaps and move towards disclosure. With the transparency this disclosure will bring, it will inevitably put pressure on lending institutions to 'green' their loan portfolios but may also enable the first movers in particular to take advantage in time of lower capital requirements for their energy efficient mortgage exposures or lower covered bond funding costs.

⇨ With its focus on data and data disclosure, the **EEM Label** – supported by a robust infrastructure including the EEM Master Template, the Harmonised Disclosure Template and legal opinions regarding GDPR compliance - provides key insights into the green credentials of existing loan books and facilitates disclosure of these, reduces the risk of greenwashing and secures confidence and trust from market participants. These efforts are supported in the Nordic countries by efforts through NEEM to ensure that lending institutions actually have sufficient data available to them through data discovery, gap analysis and the identification of ways to source missing raw energy efficiency data sets in the short and longer term across the three countries.

- Efforts in relation to Sustainable Finance have until recently been centred largely on harnessing the potential of and preparing financial institutions and investors for the climate transition through the reporting and disclosure requirements mentioned above. More recently, and through the Renewed Sustainable Finance Strategy published in July 2021, attention is turning also to developing an inclusive sustainable finance framework in which citizens, as consumers, can access sustainable finance opportunities and support the climate transition. The current revisions to the Energy Performance of Buildings Directive (EPBD), in particular the minimum energy performance standards (MEPS) for the EU's worst performing buildings, are also placing the spotlight on the EU's consumers as homeowners. All of this attention is in turn placing focus on **retail financial services products**, including green or energy efficient mortgages, and inevitably pressure on the EU's lending institutions to step up and actively respond to the challenges of supporting and financing the Renovation Wave and the climate transition, whilst presenting business opportunities for those institutions ready to accept the challenge.

⇨ The EEMI and NEEM are delivering the pre-conditions for the deployment of integrated **energy efficient mortgage market 'ecosystems'** across the EU with consumers and their needs at the centre of these efforts, by way of an energy efficient mortgage product framework and accompanying framework, the EEM Label, consumer research, including an innovative focus on consumer behaviour, an algorithm to support tailored guidance on energy renovations to consumers and institutional cooperation, to name but a few elements, stimulating the supply and take-up of energy efficient mortgages in support of the Renovation Wave.

- Beyond the ESG disclosure requirements in relation to banks' funding activities, the market is increasingly pointing to the **lack of appropriate assets** in line with covered bond programmes and sustainability frameworks exacerbated by regulatory developments, notably the EU Taxonomy, which is seen as limiting eligible assets further, which is holding the market back from reaching its full potential from a green covered bond issuance perspective.

⇨ Through their efforts to design and deploy a robust and efficient market in energy efficient mortgages, the EEMI and NEEM are stimulating the delivery of **energy efficient mortgage assets to support the issuance of green covered bonds**, responding to strong and sustained investor demand and maximising the potential of green bonds to act as a significant source of green investment. At the same time, efforts under the EEM Label and Covered Bond Label and their Harmonised Disclosure and Harmonised Transparency Templates (HDT and HTT) are supporting data availability, standardisation and disclosure which are expected to further unlock the potential of the green bond market to support the climate transition.

And efforts are still very much ongoing, with **digital innovation** in particular offering ways to support the delivery of key elements of the EEMI 'ecosystems', including energy simulators for consumers, property and data solutions for financial institutions and integrated renovation services platforms including SMEs. It is anticipated that these digital 'tools' will increasingly be deployed in the 'ecosystems' at national level moving forward, accelerating market development. In parallel, efforts are also underway through a related Horizon 2020 funded Project, TranspArEEns[5], to facilate the **access of SMEs to EE finance and investment** by mainstreaming a quali-quantitative framework for standardised collection and analysis of firms' EE and ESG information and the development of a standardised EE-ESG rating. In this way, this Project too makes a fundamental contribution to the broader efforts of the EEMI to build integrated energy efficient mortgage market 'ecosystems', in which SMEs have the necessary resources to play a crucial role.

[5] https://www.unive.it/pag/42502

CHAPTER 1
INTRODUCTION

The European Union (EU) has set itself ambitious climate change targets further to the conclusion in 2015 of landmark international agreements with the adoption of the UN 2030 agenda and sustainable development goals and the Paris climate agreement. The scale of investment needed to meet the EU's climate and energy savings targets is estimated at more than €260 billion p.a. until 2030[6], three quarters of which is accounted for by energy efficiency in buildings[7]. Against a background of very low annual rates of renovation of the building stock across Member States, the EU Green Deal highlights the need to boost renovation in order to meet the EU's energy efficiency and climate objectives.

The scale of investment needed to achieve the EU's energy savings targets cannot be met by the public sector alone and therefore the issue of private finance in the context of the transition to a more sustainable economy and future has taken centre stage in recent years. Indeed, it is widely recognised that the EU financial sector will play a central role in the climate transition, with positive knock-on effects for economic growth and job creation.

This has led to the development in the EU since 2018 of a comprehensive regulatory and supervisory agenda on Sustainable Finance, which is evolving rapidly and significantly with the objective of ensuring that the EU meets its international environmental commitments and targets. National and European policymakers, regulatory authorities and supervisors have become aware of the fundamental role in particular of the financial industry in supporting the financing of the climate transition and have made Sustainable Finance a policy imperative to secure more long-term investment in environmentally sustainable economic activities. At the same time, they are also focused on making sure banks understand and address the direct risks linked to climate change and the transition risks linked to the accelerated move to a more environmentally sustainable economy with a view to limiting the impacts on the financial system and preserving financial stability.

As a result, we have seen a plethora of binding regulation, voluntary standards and guidance which will fundamentally change the landscape in which banks operate, posing serious and perhaps unprecedented challenges to their overall structure and operations, but also presenting opportunities for the banks which are prepared to act upon them. The first Report[8] in this series of two examined this landscape specifically from the perspective of energy efficient mortgages:

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6 https://ec.europa.eu/commission/presscorner/detail/en/ip_20_17
7 https://ec.europa.eu/clima/system/files/2018-11/initiative_7_smart_en.pdf
8 https://energyefficientmortgages.eu/wp-content/uploads/2022/01/Analysis-of-Regulatory-Supervisory-Landscape-relative-to-EEM-012.pdf

On the regulatory side, the EU Taxonomy will have far reaching consequences in and of itself because it establishes a classification of environmentally sustainable economic activities which will determine alignment, or not, of banks' activities, including mortgage loans, and in turn, the covered bond or securitisation funding the mortgage, which is obviously fundamental to the EEMI and NEEM. Linked to this is the fact that the EU Taxonomy will be the basis for relevant EU disclosure legislation, including the Non-Financial Reporting Directive (NFRD), which is set to be replaced by the Corporate Sustainability Reporting Directive (CSRD), and the Sustainable Finance Disclosure Regulation (SFRD), and a new Green Asset Ratio (GAR) will identify institutions' assets financing activities that are environmentally sustainable according to the EU Taxonomy as a percentage of their total eligible exposures.

And this is not all on the regulatory side. Across the board, existing legislation is coming under intense scrutiny, as EU policymakers consider the potential to 'green' the Mortgage Credit Directive and the Capital Requirements Regulation, for example. With regard to the latter, the European Commission has given a mandate to the EBA under the CRR to assess, by 2023, whether a dedicated prudential treatment of exposures related to assets or activities associated substantially with environmental (and/or social) objectives would be justified as a component of Pillar 1 capital requirements. The EBA has furthermore responded to CRR/CRD mandates with regard to Pillar 3 disclosures of ESG risks as part of the Pillar 3 reporting framework and to determine how ESG factors and ESG risks should be included in the regulatory and supervisory framework for credit institutions and investment firms. Regulatory efforts focussed on making finance sustainable are being matched by efforts to upgrade other fundamental pieces of legislation which are crucial to the climate transition, most notably from the perspective of energy efficient mortgages the Energy Performance of Buildings Directive (EPBD) which lays down the requirements in order for the EU to move to a zero emission and decarbonised building stock by 2050.

On the supervisory side, the ECB is increasingly turning its attention to addressing the prudent and safe management of climate-related and environmental risks in the financial sector. Particularly relevant for energy efficient mortgages are supervisory expectations 7 and 8 in the ECB's recently published Guide on Climate-related and Environmental Risks, which require that, in their credit risk management, institutions consider climate-related and environmental risks at all relevant stages of the credit-granting process and monitor the risks in their portfolios. Although the guide is not binding, it will serve as a basis for supervisory dialogue, during which the ECB will discuss its expectations set out in this guide in terms of any possible divergences in institutions' practices. This is inevitably putting pressure on lending institutions to address the new supervisory expectations by adjusting their strategies, policies, procedures and infrastructures across the board. Added to this is a series of planned actions in the context of the ECB's monetary policy strategy related to disclosure, eligibility for the collateral framework and asset purchases, and ratings. On disclosure, the ECB will require climate-related disclosures, linked to the EU

Taxonomy, NFRD and SFDR, for banks using private sector assets as collateral in ECB monetary policy operations and for private sector asset purchases.

In addition to the regulatory and supervisory pressure, banks are also facing growing scrutiny from other market participants. Investors, for their part, are paying more and more attention to ESG factors and are scrutinising the ESG credentials of the companies they invest in. Interestingly, it is not only so-called 'responsible investors' which are focussed on sustainable investments; mainstream investors are also integrating ESG factors into their investment decisions as the scale and significance of the risks and opportunities presented by climate change in particular become apparent[9]. What is more, credit rating agencies are also actively integrating ESG considerations into their rating methodologies, meaning the way in which financial institutions are managing climate change risks will also influence their credit ratings. In recent years, we have seen a proliferation of ESG rating agencies as well as the mainstream rating agencies buying-in specific ESG competence[10]. And finally, bank customers, whether for ideological reasons or because of the tightening of legislation around building energy performance, will also be expecting their banks to step up their activities in the ESG space and respond to their (financing) needs and expectations.

Against this background of legislative requirements, supervisory and market expectations banks simply no longer have the choice to 'wait and see' when it comes to embedding sustainability into their business models and strategies. Indeed, it is important that banks are already taking the necessary measures to understand the implications of the regulatory and supervisory landscape related to sustainable finance and the EU Green Deal for their business activities, to identify how their activities are impacted and what they need to do to secure compliance and alignment and are moving towards implementation and operationalisation.

According to a global survey conducted by KPMG International in autumn 2019, "*over three-quarters of CEOs (76 percent) say that their organization's growth will depend on their ability to navigate the shift to a low-carbon, clean-technology economy*"[11]. In the previous NEEM deliverable, we highlighted the many opportunities for banks which are willing to move fast and take advantage of them, meaning that the shift should not only been seen in terms of time and cost. Indeed, as Ramboll describes[12], there are advantages and opportunities to be had in terms of compliance, reputation and risk management, access to finance, ability to assess and communicate sustainable impact and futureproofing. Early preparation and action will enable banks to meet head on and address the challenges that this landscape is already presenting and will continue to present in the months and years ahead, whilst enabling them to take advantage as much as possible of the opportunities described here. However, while banks might

9 https://assets.kpmg/content/dam/kpmg/ie/pdf/2020/01/esg-and-investor-relations.pdf
10 https://think.ing.com/articles/esg-and-credit-ratings-the-pressure-has-accelerated
11 https://assets.kpmg/content/dam/kpmg/xx/pdf/2019/05/kpmg-global-ceo-outlook-2019.pdf
12 https://ramboll.com/ingenuity/the-eu-taxonomy

recognise the need to adapt and also see the opportunities in doing so quickly, actually understanding what adapting means in concrete terms and making that move is challenging against a market, regulatory and supervisory background which is changing rapidly and significantly.

This was borne out in the results of the ECB's first-ever large-scale assessment[13], published on 24 November 2021, of how European banks are adjusting their practices to manage climate and environmental (C&E) risks, in line with the expectations set out in the ECB's November 2020 Guide on Climate & Environmental risks. Indeed, the ECB concludes that while banks have taken initial steps towards incorporating climate-related risks, none is close to meeting all supervisory expectations regarding management bodies, risk appetite and operational risk management.

The analysis conducted previously under NEEM reveals a vast, complex and interconnected regulatory and supervisory landscape related to sustainable finance. This will affect all parts of banks' activities including their energy efficient mortgage lending activities, whether this be from a retail, funding or supervisory perspective, and will require a complete review of banks' strategies, policies, procedures and infrastructures. Significant however is the fact, as demonstrated in the NEEM deliverable, that impacts will be felt in different ways across banks' activities. Banks themselves determine to the largest extent their retail and funding strategies, whereas banks are subject to the supervisory framework and it is here, across the three pillars, that arguably the most significant impacts of the regulatory and supervisory landscape will be felt.

After considering alignment with the EU Taxonomy as the 'gateway' to alignment and compliance with the Sustainable Finance agenda more broadly, the present Report considers the specific challenges and opportunities presented by the regulatory and supervisory landscape for energy efficient mortgages across banks' activities and commitments. In this respect, we start with banks' supervisory-related commitments in line with the conclusion outlined in the preceding paragraph and focus in on the three pillars of the EU's supervisory framework: minimum capital requirements, supervisory review and market discipline (disclosure). We then move on to retail considerations, highlighting the challenges and business opportunities for banks arising from a policy agenda which is increasingly putting the consumer at the heart of the sustainable transition, also in their role as homeowners. Finally, we consider what the regulatory landscape means for banks' funding activities. Across all three areas of activity, we consider the internal preparations that banks will need to undertake in order to achieve compliance and alignment and show how the EEMI and its raft of research and tools, as well as key NEEM outputs, can offer a fast track to compliance.

[13] https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202111guideonclimate-relatedandenvironmental-risks~4b25454055.en.pdf

In essence, this Report is intended to provide guidance to support lending institutions in navigating through this complex landscape with a view to aligning as much as possible their mortgage lending and covered bond funding activities to the regulatory and supervisory landscape, enabling them to minimise the burdens and maximise the opportunities to the benefit of consumers, investors and overall financial stability.

CHAPTER 2

TAXONOMY ALIGNMENT AS BASIS FOR COMPLIANCE

The EU Taxonomy, and its technical screening criteria (TSC) contained in the April 2021 Delegated Act on Sustainable Activities for Climate Change & Mitigation Objectives[14], is and will remain the benchmark for much of the regulatory and supervisory landscape in the area of Sustainable Finance and will therefore be a very relevant standard also for energy efficient mortgages.

In this chapter, we:

- Highlight the most relevant aspects of the EU Taxonomy for energy efficient mortgages.
- Point to what is at stake in relation to interpreting the Taxonomy from the perspective of financing construction and real estate and how the EEMI is addressing related challenges and seeking to secure appropriate interpretation.
- Outline an example of efforts through the EEMI to overcome the specific practical concern of aligning the Taxonomy's different energy performance thresholds and measurement parameters i.e. EPC classes, 15% best in class and Primary Energy Demand (PED).

For energy efficient mortgages, the TSC for buildings - focussed on (1) construction of new buildings, (2) renovation of existing buildings and (3) acquisition and ownership of buildings - are fundamental, as they will ultimately determine Taxonomy compliance of the underlying mortgage (or consumer) loans used to finance the acquisition, construction or renovation of buildings, as well as the covered bond or securitisation issued to fund mortgage loans.

The Energy Efficient Mortgage Label Committee and its EEM Label Taxonomy Task Force are currently examining the TSC to understand the full extent of their implications for energy efficient mortgages, as well as for the Energy Efficient Mortgage Label and its Harmonised Disclosure Template. At jurisdictional level, a number of EEMI national hubs are also carrying out 'forensic' analysis of the TSC against the background of their specific national circumstances to understand exactly what compliance means and how this can be achieved.

At the time of writing in May 2022, there are currently more questions than answers on exactly how the EU Taxonomy should be interpreted from the perspective of the financing of the economic activities in question. In the first Report[15] in this series of two, we considered some of the key interpretation challenges in more detail and discussions on this continue today, as indicated above. One thing is sure, however, the way in which eligibility is interpreted in due course will have a significant impact on the approach that lenders take to financing these

[14] https://eur-lex.europa.eu/resource.html?uri=cellar:d84ec73c-c773-11eb-a925-01aa75ed71a1.0021.02/DOC_2&format=PDF

[15] See footnote 8.

activities, e.g. building renovation, with knock-on effects for consumer access to and affordability of the related finance. In this respect, careful alignment between the EU Taxonomy and other pieces of legislation, for example, the Energy Performance of Buildings Directive (EPBD) and the EU Green Bond Standard (EU GBS) is crucial in order to maximise the potential of the Mortgage Industry in this case to support the Renovation Wave. To this end, the EEMI and its national hubs are in regular dialogue with the European institutions on this key issue of alignment, particularly in the context of the review of the EPBD (see later section for more details on this).

Through the EEMI, efforts are also underway to design a methodology to identify the 15% best in class of regional or national building stocks, in line with the EU Taxonomy. To recall, the TSC for the acquisition and ownership of existing buildings are as follows: "*For buildings built before 31 December 2020, the building has at least an Energy Performance Certificate (EPC) class A. As an alternative, the building is within the top 15% of the national or regional building stock expressed as operational Primary Energy Demand (PED) and demonstrated by adequate evidence, which at least compares the performance of the relevant asset to the performance of the national or regional stock built before 31 December 2020 and at least distinguishes between residential and non-residential buildings*"[16]. (P. 178)

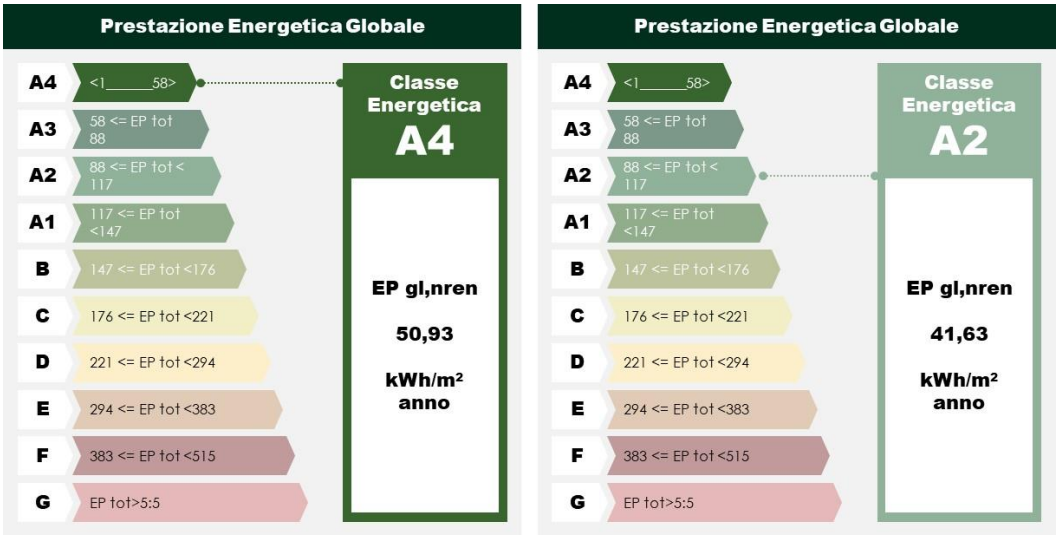
In the context of the discussions mentioned above, it became apparent that identifying the top 15% of the existing building stock using the Primary Energy Demand (PED) is challenging. Taking the example of Italy, where a market demonstrator is being run in the context of the Energy Efficient Mortgage Market Implementation Plan (EeMMIP) Project[17], a continuous function assigning a specific interval of PED to an EPC class does not exist. Accordingly, it is not possible to identify a threshold at 15% of the distribution.

The following figure shows how buildings located in Italy with a worse EPC label (A2 vs A4) can have a better PED (41.63 KWh/m2 year vs 50.93 KWh/m2 year):

[16] https://eur-lex.europa.eu/resource.html?uri=cellar:d84ec73c-c773-11eb-a925-01aa75ed71a1.0021.02/DOC_2&format=PDF

[17] https://energyefficientmortgages.eu/

Figure 1
Relationship between PED and EPC classes in Italy



Source: CRIF

The result is that the introduction of PED in the context of the EPC embeds uncertainty in the Italian market, giving rise to incoherence and rendering communication of these considerations to the market difficult.

With a view to addressing this challenge and facilitating compliance of EEM with the Taxonomy's TSC through the EEM Label, an analysis of the Italian building stock and available EPCs has been conducted with a view to identifying, in accordance with a preliminary hypothesis and selected clusters, a threshold at 15% of the distribution to comply with the 15% best in class requirement of the EU Taxonomy.

In the first instance, efforts have been focussed on designing and testing a methodology[18] in Italy which can in turn be shared and adapted across other jurisdictions and EEM national market hubs to support wide-spread compliance.

[18] Soon to be published on www.energyefficientmortgages.eu

CHAPTER 3
SUPERVISORY FRAMEWORK

As indicated in the introduction to this Report, the regulatory and supervisory landscape in the area of Sustainable Finance will affect all aspects of the banking business, but arguably none so much as a banks' supervisory-related commitments.

In this section of the present Report, we will:

- Describe the Basel Accords and banks commitments under the Capital Requirements Regulation (CRR) with a focus on those aspects relevant for energy efficient mortgages
- Explore the challenges and opportunities for banks that the regulatory and supervisory landscape is presenting in this area
- Show how the EEMI and NEEM can help banks to fast-track their alignment and compliance efforts from the perspective of energy efficient mortgages.

By way of background, banking supervision in the EU is largely driven by implementation, through the Capital Requirements Regulation (CRR)[19], of the Basel Accords, a set of regulatory standards established globally by way of an agreement between central banks and financial regulators (see box 1 for more details).

[19] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R0575

Box 1 What are the Basel Accords?

The Basel Accords can be broken down into Basel I, II and III:

Basel I
- A set of global minimum capital requirements for banks agreed in 1988.
- Recommended the introduction of a minimum ratio of capital to risk-weighted assets of 8% to be implemented by the end of 1992.

Basel II
- Replaced the 1998 Accord in 2004
- Introduced the three-pillar framework (described in more detail below) to ensure that banks hold sufficient capital to meet their current and expected liabilities i.e. (1) minimum capital requirements (2) supervisory review and (3) market discipline.

Basel III:
- Intended to strengthen the regulation, supervision and risk management of the banking sector by:
  - Improving the banking sector's ability to absorb shocks arising from financial and economic stress, whatever the source;
  - Improving risk management and governance;
  - Strengthening banks' transparency and disclosures.
- Was endorsed by the G20 in November 2010 and consists of several sequential updates:
  - Basel III: A global regulatory framework for more resilient banks and banking systems (revised version June 2011) – focus on level and quality of bank capital.
  - Liquidity Coverage Ratio (January 2013)
  - Net Stable Funding Ratio (October 2014)
  - Basel III: Finalising post-crisis reforms (December 2017) – focus on calculation of banks' Risk Weighted Assets (more on this below.
  - Minimum capital requirements for market risk (January 2016, revised January 2019)

At the heart of the Basel Accords is a system of three pillars introduced under Basel II (see box 1) to ensure that banks hold sufficient capital to meet their current and expected liabilities: (1) minimum capital requirements, (2) supervisory review process and (3) market discipline[20]:

3.1 PILLAR 1 (MINIMUM CAPITAL REQUIREMENTS)

Pillar 1 of the supervisory framework is focussed on ensuring that minimum regulatory capital calculated for credit risk, operational risk and market risk is appropriately aligned to the bank's actual risk of economic loss. For most banks, the most significant source of credit risk are loans, and it is therefore the calculation and management of minimum regulatory capital for credit risk that is most relevant in the specific case of energy efficient mortgages and will therefore be the focus of this analysis.

[20] https://www.bis.org/publ/bcbs128.pdf

3.1.1 The challenges/opportunities

Box 2 The challenges/opportunities of Pillar 1

Challenges/opportunities

- The implementation of the Basel III Reforms into EU legislation presents a timely opportunity to consider the CRR's role in accelerating the 'greening' of banks' balance sheets and to increase sustainable investment under the CMU.
- In this context and more than ever before, the potential for the credit risk mitigation impact of energy efficiency to be reflected in the capital framework for energy efficient mortgages is on the EU agenda.
- At the same time, physical and transition risks will place pressure on banks' balance sheets which could lead policymakers and regulators to also focus on the least well performing assets.
- This context warrants efforts by banks to conduct a robust audit of their existing loan portfolios to identify and tag existing energy efficient mortgages and implement the necessary infrastructure, processes and procedures to originate this type of mortgages.

Solutions

- EEMI Master Template for the internal gathering & processing of energy efficient mortgage data: (1) helps lending institutions 'tag' existing EEM in their loan books, (2) supports the origination of new energy efficient mortgages and facilitate progressive 'greening' of loan books and (3) delivers empirical evidence for analysis and potential disclosure to prudential authorities (impact on LTV and PD ratios), helping to secure an appropriate prudential treatment and potentially reduce regulatory costs.
- EEM Label Harmonised Disclosure Template further enhances transparency and standardisation in support of overall EEM market development, as well as efforts to secure an appropriate prudential treatment for EEM.
- Data expansion efforts in the Nordic Region will support lending institutions' access to data
- GDPR analysis and compliance guidance linked to EEM data collection, processing and disclosure will provide lending institutions with legal certainty and minimise liability risks.
- EEMI research on appropriate prudential treatment for EEM is intended to guide lending institutions and supervisory authorities in understanding and accounting for the credit risk mitigation effects of energy efficiency in capital requirements respectively.

Regulatory capital for credit risk is calculated on the basis of risk weights (RW) which are assigned to banks' assets as a measure of their riskiness and are therefore used to derive risk-weighted assets (RWA). In recognition of the diversity of banking models, financial institutions can calculate their regulatory capital in two ways:

1. The Internal Ratings Based Approach (comprising the Foundation (F-IRB) and Advanced (A-IRB) approaches which differ according to the inputs that banks are permitted to provide and those which are provided by the supervisor) are typically favoured by large, internationally active financial institutions. They allow for the use of institutions' own internal models to estimate their credit risk and therefore their risk-weighted assets and capital requirements, based on risk parameters related to credit risk, namely the probability of default (PD) (F-IRB & A-IRB), the loss given default (LGD) (A-IRB only), the exposure at default (ED) (A-IRB only) and the effective maturity (A-IRB only), risk weight functions and minimum requirements that must be satisfied in order for banks to receive supervisory approval for use of their own internal rating systems.
2. The Standardised Approach, typically favoured by smaller, non-internationally active financial institutions, is laid down in the Basel Framework (and CRR) and provides for a comparatively simple framework for the calculation of risk-weighted assets based on standardised risk weights which are set by supervisors for each asset.

At the time of writing, the EU is deliberating the appropriate implementation of the final phase of the Basel III Reforms first published in 2011[21]. As indicated in box 1, the first phase of the Reforms focussed, among other things, on increasing the level and quality of capital, limiting leverage through the leverage ratio and improving liquidity through the Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). The most recent and final phase of the Reforms[22] published in 2017 and currently under discussion in the EU *"seek to restore credibility in the calculation of risk-weighted assets (RWAs) and improve the comparability of banks' capital ratios"*[23]. Specifically, changes introduced under the final Basel III Reforms in 2017 aim at increasing risk sensitivity and comparability of risk-weighted assets in the SA and reducing unjustified variability in banks' calculation of RWA through the IRB approaches. A key element of the final Reforms related to the IRB approaches is the introduction of an output floor which sets a lower limit on a financial institutions' capital requirements calculated under the IRB approaches as a function of the Standardised Approach. More specifically, a financial institutions capital requirements calculated under the IRB approaches must be at least 72.5% of the amount that would be calculated using the SA.

As inferred in the paragraphs above, with its focus on risk-weighted assets, a key element of the Basel Accords is the recognition that different assets have different levels of riskiness and the characteristics of different categories of assets furthermore determine their riskiness. The risk mitigating effect of the underlying collateral means that mortgages have long been recognised as comparatively low risk compared to other assets and have therefore been assigned lower RW. Basel I assigned a flat 50% RW to loans secured by residential property, while Basel II introduced a 35% RW. In the final Basel III Framework, RW are to be determined based

[21] https://www.bis.org/publ/bcbs189.pdf
[22] https://www.bis.org/bcbs/publ/d424.pdf
[23] https://www.bis.org/bcbs/publ/d424_inbrief.pdf

on the loan-to-value (LTV) ratio of the mortgage; the higher the LTV, the higher the risk and therefore the RW. Under the IRB approaches, it is in particular the LGD and PD that determine the RWs to be attributed in the case of residential mortgages. It therefore follows that any factor which impacts the LTV, LGD and/or PD of a loan could result in lower RW and therefore lower capital requirements for those assets.

One of the underlying premises of the energy efficient mortgage product is that a negative correlation between building energy performance and credit risk could be reflected in a realignment of capital requirements for energy efficient mortgages and in turn drive a virtuous circle, according to which all stakeholders, including borrowers through potentially lower interest rates, derive a benefit. It was this 'business case' which gave rise to significant efforts under the EEMI to substantiate this relationship through in-depth econometric analysis. The results of this analysis[24] point to a significant negative correlation between building energy performance and credit risk, based on a lower probability of consumer default. The most recent of the three pieces of research (May 2021) also considers the impact on loss-given-default linked to increased property value. The authors of the different sets of analysis find that "*the default rate is lower for borrowers with less disposable income. The results hold for a battery of robustness checks. This suggests that the energy efficiency ratings complement borrowers' credit information and that a lender using information from both sources can make superior lending decisions than a lender using only traditional credit information. These aspects are not only crucial for shaping future energy policy, but also have implications for the risk management of European financial institutions.*"[25] Most recently in January 2022, the EU Commission and UNEP FI's co-convened Energy Efficiency Financial Institutions Group (EEFIG) published further new evidence[26], based on statistical modelling from over a million mortgages in Germany, Finland, and UK which also demonstrates a statistically relevant correlation between the energy performance of building collateral and mortgage credit performance.

At a time when sustainability is at the forefront of policymakers', regulators' and supervisors' minds, the implementation of the Final Basel III Reforms is a timely opportunity to consider the CRR's role in accelerating the 'greening' of banks' balance sheets and to increase sustainable investment under the CMU. In this respect, the clarification through Article 208 of the draft European Commission proposal[27] for a revised CRR implementing Basel III that "*modifications made to the property that improve the energy efficiency of the building or housing unit must be considered as unequivocally increasing its value*" (p.121) represents an

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[24] https://energyefficientmortgages.eu/wp-content/uploads/2021/07/BE-IT-NL-UK-Correlation-Analysis.pdf, https://energyefficientmortgages.eu/wp-content/uploads/2021/07/Italian-Correlation-Analysis.pdf & https://energyefficientmortgages.eu/wp-content/uploads/2021/07/Extended-Dutch-Correlation-Analysis.pdf

[25] https://energyefficientmortgages.eu/wp-content/uploads/2021/07/Extended-Dutch-Correlation-Analysis.pdf

[26] https://op.europa.eu/en/publication-detail/-/publication/32387875-b94b-11ec-b6f4-01aa75ed71a1/language-en/format-PDF/source-255678423

[27] https://eur-lex.europa.eu/resource.html?uri=cellar:14dcf18a-37cd-11ec-8daf-01aa75ed71a1.0001.02/DOC_1&format=PDF

important regulatory step towards recognising the relevance of building energy performance for credit risk and ensuring an appropriate, corresponding treatment.

The mandate given to the EBA under Article 501(c) CRR[28] to assess whether a dedicated prudential treatment of exposures related to assets or activities associated substantially with environmental (and/or social) objectives would be justified as a component of Pillar 1 capital requirements is further evidence of the growing recognition of the relevance of such factors for a banks' capital requirements. To recall, the EBA is assessing: (1) methodologies for the assessment of the effective riskiness of exposures related to assets and activities associated substantially with environmental and/or social objectives compared with the riskiness of other exposures; (2) the development of appropriate criteria for the assessment of physical risks and transition risks; and (3) the potential effects of a dedicated prudential treatment of exposures associated substantially with environmental and/or social objectives and activities on financial stability and bank lending in the Union. Significantly, in its Renewed Sustainable Finance Strategy[29], the European Commission proposes that the EBA brings forward its work in this area by two years, to 2023, pointing to the perceived importance of this exercise by the European Commission and the potential for accelerated follow up to this mandate.

The efforts under the EEMI to substantiate the correlation between building energy performance and credit risk have garnered significant interest in the EU and Member States, nowhere more so than in Hungary, where, inspired by the work of the EEMI, the Hungarian Central Bank has been offering preferential capital requirements to banks against balance sheet exposure to energy efficient housing loans since 2020[30] and recently expanded this to include renewable energy loans and corporate green bond exposures.

Against this background, the possibility of the credit risk mitigation impact of energy efficiency being reflected in the capital framework warrants efforts by banks to conduct a robust audit of their existing loan portfolios to identify and tag existing energy efficient mortgages and implement the necessary infrastructure, processes and procedures to originate this type of mortgages. This exercise is all the more pertinent against a background where physical and transition risks will put pressure on banks' loan portfolios and regulators' and supervisors' attention will likely focus not only on the best performing assets but also turn to those assets and the related exposures which are most at risk from climate change.

3.1.2 The solutions

EEMI Master Template

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28 https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02013R0575-20210930&from=EN

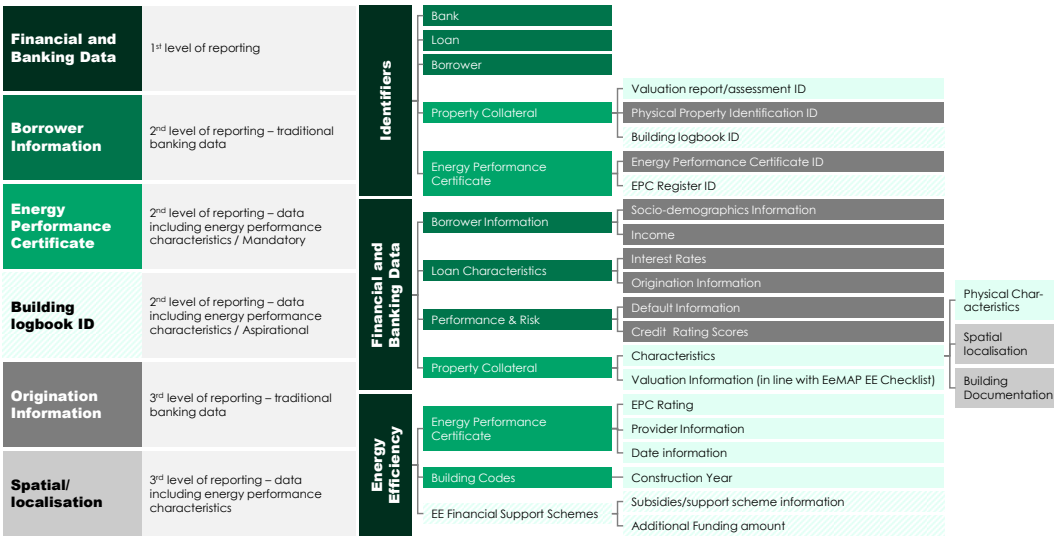
29 https://eur-lex.europa.eu/resource.html?uri=cellar:9f5e7e95-df06-11eb-895a-01aa75ed71a1.0001.02/DOC_1&format=PDF

30 https://www.mnb.hu/letoltes/notice-preferential-green-capital-requirement.pdf

A core output of the second H2020 funded Project under the EEMI umbrella, the Energy Efficient Data Protocol & Portal (EeDaPP) Project, was the development of a common data protocol to help lending institutions manage the additional complexity of energy efficiency mortgages and organise information flows more efficiently. Indeed, and as suggested above, one of the key tenets of EEM is the importance of understanding and harnessing the links between the energy performance and value of the asset, credit risk assessments and the determination of financing/loan conditions. The physical characteristics and energy performance information of buildings can be used to generate decision-relevant inputs for lending institutions.

The resulting "Master Template"[31] is an excel document that aims to capture all the data points related to energy efficient mortgages during the lifetime of the loan for the purpose of mortgage origination, underwriting and funding, as well to comply with regulatory reporting requirements. Beyond the 'traditional' data points, the Master Template also serves as best practice guidance on what minimum additional energy efficiency and property related data should be collected in order to implement energy efficient mortgages, namely EPC category or score and year of construction (see Figure 2). In essence, the Master Template constitutes an internal checklist which can help banks to integrate all energy efficiency related risk and value information, alongside the more conventional information, into their lending decisions.

Figure 2
Core data of Master Template & Legend



Source: EEMI Master Template Explanatory Guidance (link)

[31] https://energyefficientmortgages.eu/knowledge-hub: See EEMI Master Template

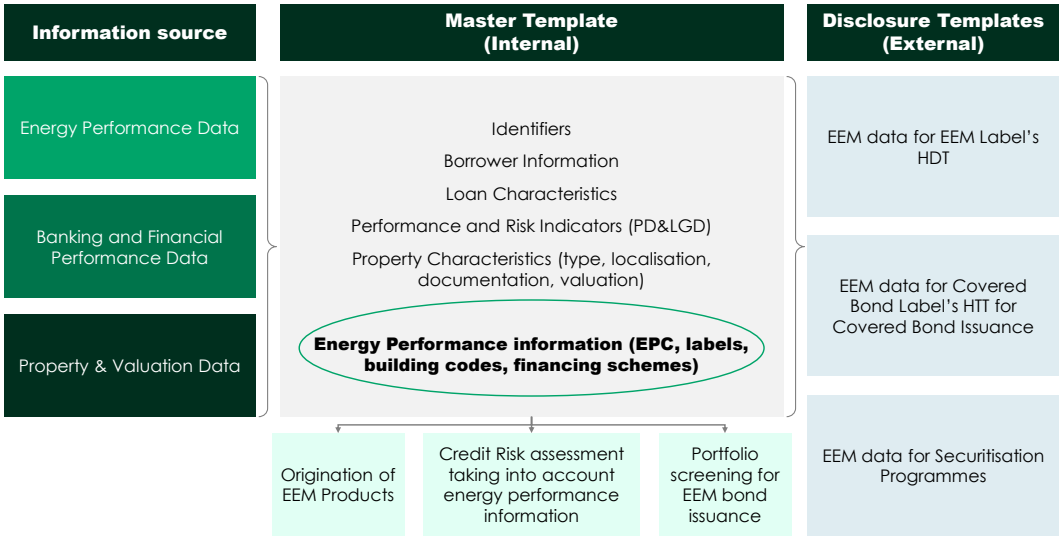
The EEMI Master Template Explanatory Guidance[32] provides more detailed information on each of the data sets identified in Figure 2 and shows how the common template is based to the largest extent on the data and data templates already used by lending institutions to comply with regulatory disclosure requirements laid down by the ECB, EBA and ESMA.

A key use of the "Master Template" in relation to the pillar 1 challenges and opportunities includes delivering empirical evidence for analysis and potential disclosure to prudential authorities (impact on LTV and PD ratios) and the development of a reporting standard and best practice at optimised cost, helping to secure prudential treatment and potentially reduce regulatory costs.

There are further business development and risk management uses of the Master Template, in particular: (1) as a robust tool to support lending institutions in 'tagging' existing EEM which comply with the EEM Label Convention (see box 3) in their loan books and (2) supporting the origination of new EEM and the progressive 'greening' of banks' loan books and therefore balance sheets - which will be explored in more detail in subsequent sections and (3) as a support for issuers of EEM covered bonds or securitisation programmes, which will also be explored in more detail in the 'funding section'.

The figure below sketches the Master Template and its functions within the EEM lifecycle:

Figure 3
Functions of EEMI Master Template in EEM Lifecycle



Source: EEMI

EEM Label & Harmonised Disclosure Template

[32] https://energyefficientmortgages.eu/wp-content/uploads/2021/07/EEMI-Master-Template-Explanatory-Document.pdf

An important complement to the EEMI Master Template is the Harmonised Disclosure Template (HDT)[33] of the Energy Efficient Mortgage Label[34]. To recall, the EEM Label is intended as a quality and transparency benchmark to promote trust in and secure regulatory recognition of the energy efficient mortgage asset class. The HDT is an excel-based form that lending institutions which have been granted the EEM Label use to disclose information on their energy efficient mortgage products, with the primary aim of facilitating and therefore improving access to relevant, consistent and comparable data on energy efficient mortgages within and between jurisdictions for investors, regulators and other market participants for due diligence purposes. It is anticipated that this transparency will aid the ongoing substantiation of the negative correlation between building energy performance and credit risk, supporting a potential realignment of capital requirements by allowing for enhanced evaluation and tracking of the financial performance of EEM relative to alternatives and providing greater transparency regarding climate risks and resilience.

GDPR Analysis & Compliance Guidelines

Linked closely to the EEM Label are considerations around GDPR compliance. Indeed, there have long been questions and concerns raised by lending institutions regarding the legal basis for energy efficiency data collection, processing and disclosure. With a view to addressing these concerns and giving some legal certainty to lending institutions regarding GDPR compliance considerations in the completion and disclosure of the HDT and regarding the mitigation of liability risks, the EEMI recently delivered three legal opinions addressing these issues[35], using the Dutch EEMI national hub (see below for more on the national hubs) as a 'test case'. These legal opinions can be used by lending institutions to stress test their own arrangements internally to ensure GDPR compliance and make any necessary adjustments.

NEEM Data Expansion Efforts

Additionally, through NEEM and with a focus on the Nordic Region, efforts are being undertaken to ensure that lending institutions have sufficient data available to them to scale-up lending for energy renovations. In a first step, the Green Digital Finance Alliance has focussed on 'data discovery' and gap analysis by way of a mapping exercise of the available energy data supply in each of the Nordic countries and a classification of data according to data source, data quality, frequency of updates and data granularity[36]. The objective of this exercise was to assess the availability and readiness of data to be deployed by banks for two main purposes:

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33 https://www.energy-efficient-mortgage-label.org/hdt

34 https://www.energy-efficient-mortgage-label.org/

35 https://energyefficientmortgages.eu/wp-content/uploads/2022/04/EEM-Label-GDPR-Compliance-Considerations.pdf

36 https://neemhub.eu/publications/data-foundation-for-scaling-energy-efficient-mortgages-in-denmark-norway-and-sweden

1. Use of data for identification of potential candidates in a mortgage portfolio for energy renovation
2. Remote identification of the causes of energy inefficiencies, for example, lack of air tightness, insulation or occupants' behaviour, which can inform and guide the design of an appropriate renovation package and/or financing.

The data supply profile for each country was developed by identifying and recording data availability for lending institutions across four main data categories, highlighting quality concerns or data gaps: (1) energy consumption data, (2) energy production or energy source data, (3) building parameter data and (4) weather data.

The authors find the following for each country:

- Denmark: the data foundation is fairly well-developed and is ready for the two purposes described above, although there will be certain challenges, for example related to data quality in certain instances, which will need to be addressed.
- Norway: the data infrastructure is ready for the two purposes described above. Again, there will be challenges to be overcome, for example relating to data gaps and lack of access to certain datasets.
- Sweden: certain improvements will be needed to the data foundation in order to be ready for the two purposes described above, in particular related to the fragmented nature of the data foundation and lack of access to hourly energy consumption data.

In terms of next steps, NEEM is currently focussing on data expansion i.e. the identification of the data ecosystem available in each country from which to source missing EE data over the short and longer term. These efforts are being undertaken in parallel to a mapping exercise of the data software solutions available in the Nordics on the supply side, as well as those deployed by lending institutions in other EU markets. The intention is to test a prototype algorithm for remote screening and automated retrofitting advice adapted to a flexible energy system, as well as for remote verification of savings. In section four of this Report we will describe the algorithm currently under development by NEEM to provide customer-specific energy renovation recommendations.

The 'methodology' described above will serve as a very useful guide for other national jurisdictions to conduct similar audit and gap analysis exercises, as well as explore the potential for a similar algorithm to be applied for the purposes of remote screening and automated advice.

EEMI Research on appropriate treatment for EEM

Finally, and with a view to supporting potential future efforts to secure an appropriate capital framework for EEM, in a Report[37] delivered under the EEMI, Copenhagen Economics analysed identified risk mitigating factors of energy efficient

[37] https://energyefficientmortgages.eu/wp-content/uploads/2021/12/Draft-report_REV_EEMI-layout.pdf

mortgages and estimated how they would impact capital requirements from a risk perspective. They then benchmarked the results from this exercise with the current treatment of EEM in the EU in order to identify shortcomings in the regulatory capital framework, with a view to providing recommendations in order to appropriately account for energy efficiency aspects in the existing capital requirements framework.

CE's main conclusions[38] are:

- Energy renovations entail risk mitigating factors, which typically lead to a reduction in risk assessment within the prudential framework, i.e. lower capital charges.
- This risk mitigation is often not appropriately captured by the prudential framework of individual institutions.
- The risk mitigation is very case-specific. For a typical EU household, CE finds that a typical energy renovation could reduce risk weights with some 2-3 percentage points.
- The green transition will increase the risk mitigating potential of energy renovations.
- Transition risks seem to be manageable on average, but risks are very portfolio-specific, requiring portfolio-specific analysis.
- Once technical and data-related barriers are resolved, the current regulatory framework should be able to capture risk mitigating effects of energy renovations.
- Safeguarding the risk sensitivity of the regulatory framework is a prerequisite to appropriately reflect the risk mitigating factors of EEM.
- How exactly to incorporate the impact of transition risks in the current regulatory framework remains an open question and requires further research.
- The urgency of the climate agenda might require that incentives be immediately aligned with the underlying risks for EEM.

In parallel to the research for the EEMI, CE also drafted a *Guide to Climate Transition Risk Scenario Analysis for Mortgage Portfolios* which is intended to facilitate the inclusion of energy efficiency and sustainability of energy efficient mortgages by lending institutions in their credit risk assessments. This is discussed in more detail below.

3.2 PILLAR 2 (SUPERVISORY REVIEW)

Pillar 2 of the framework is focussed on the process of review, commonly known as the Supervisory Review and Evaluation Process (SREP), by supervisors of banks' capital and liquidity positions to ensure they are adequate for their risk profiles. The dialogue with supervisors is intended as a tailored bank or jurisdictional level review to ensure that banks have appropriate internal processes in place and are using robust and appropriate techniques to manage their risk. Among other outcomes, the SREP gives rise to a bank-specific capital requirement in addition to

[38] https://energyefficientmortgages.eu/wp-content/uploads/2021/12/Summary-and-recommendations_REV_EEMI-layout.pdf

the Pillar 1 minimum capital requirements. This additional capital requirement is intended to cover risks which are not (appropriately) covered by pillar 1, notably interest rate risk in the banking book and non-financial risks such as strategic risk, business model risk and reputational risk or which may be under-estimated. The requirement is legally binding and banks that fail to comply with the 'Pillar 2 Requirement' (P2R) can be sanctioned.

Additionally, banks are expected to comply with the ECB's non-binding bank-specific Pillar 2 guidance, which indicates the level of capital that a bank should maintain as a buffer against financial stress.

3.2.1 The challenges/opportunities

Box 3 The challenges/opportunities of Pillar 2

Challenges/opportunities

- In line with the growing importance of climate change for the economy and increasing evidence of its financial impact on banks, the ECB and central banks are more and more sensitive to the prudent and safe management of climate-related and environmental risks in the financial sector.
- Through climate risk stress tests, banks' climate-risk preparedness is coming under increasing scrutiny and banks will need to respond to the supervisory expectations in this area in order to minimise the potential over time for quantitative SREP measures, i.e. capital add-ons under pillar 2, which would lead to additional equity costs.

Solutions

- Extensive research and tools intended to support the design, deployment and scaling-up of energy efficient mortgage products, by way of an energy efficient mortgage 'ecosystem', as a response to calls to offer sustainable products
- EEMI Master Template to support the collection and processing of EEM data for risk monitoring, analysis and management purposes supported by research into the correlation between building energy performance and credit risk
- EEMI Checklist and Guidance for Property Valuers to complement existing valuation practices with a specific and more detailed focus on building energy performance and its impact on property values.
- EEMI Guidance on the inclusion of energy efficiency and sustainability of energy efficient mortgages in credit risk assessments.

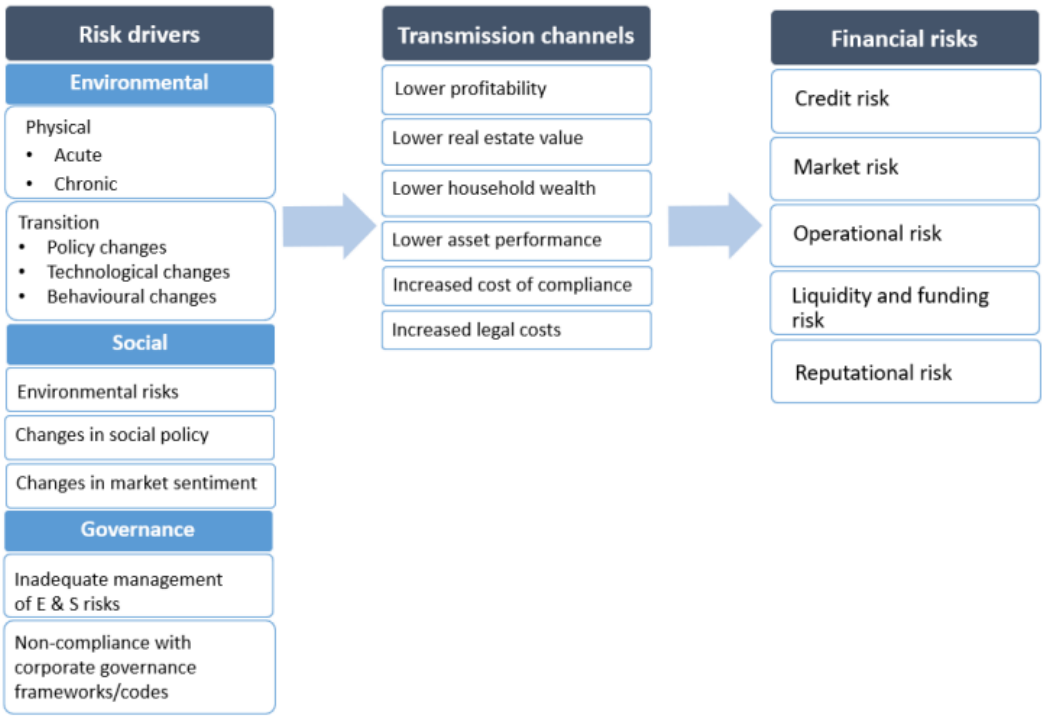
In recent years, concerns have been raised about the ability of the existing supervisory review processes to provide supervisors with the necessary insights into the impact of ESG risks on financial positions and related weaknesses or vulnerabilities. Recently, the EBA and the ECB have taken actions - and will continue to do so in the months and years ahead - with a view to promoting and ensuring the appropriate identification, assessment and management of ESG risks by credit institutions and investment firms and including ESG risks in the SREP:

EBA Report on ESG Risks Management & Supervision

The EBA's Report on Environmental, Social and Governance (ESG) Risks Management & Supervision[39] addresses the potential inclusion of ESG risks in Pillar 2 by providing credit institutions and investment firms with common definitions of ESG risks, recommending how they should identify, assess and manage ESG risks through the implementation of arrangements, processes, mechanisms and strategies and by providing guidance to supervisory authorities on including ESG risks in the SREP.

The Report outlines the impact that ESG factors, especially climate change, can have on institutions' counterparties or invested assets, affecting financial risks and therefore also credit risk. The EBA outlines the transmission channels through which ESG risks impact the traditional financial risks categories as follows (p.34):

Figure 4
EBA Summary of ESG Risk Drivers, their Transmission Channels & How these can impact financial risk categories



Source: EBA Report on ESG Risks & Management (link)

[39] https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Reports/2021/1015656/EBA%20Report%20on%20ESG%20risks%20management%20and%20supervision.pdf

In her article entitled *"ESG Risks in the Banking Prudential Framework" for EMF Hypostat 2021*[40], L. Neuteboom points to the relevance of energy efficiency, housing and real estate from an ESG risk assessment perspective, pointing therefore also to the relevance of energy efficient mortgages in managing the risk drivers and the related impacts on financial risk. She refers to the use of asset-based evidence such as the performance of energy efficient mortgages as a method for assessing environmental risks specifically. In this respect, in its Report (p.67), the EBA points directly to the EEMI analysis of the correlation between building energy performance and credit risk. L. Neuteboom furthermore points to the relevance of the housing and real estate sector in the context of climate stress tests and scenario analyses when assessing physical risks linked to climate change, which can translate, together with other variables, into changes in the risk profile of asset portfolios. In this respect, she highlights an assessment conducted by Acclimatise and 16 participating UNEP FI banks[41], in which physical risk in the form of climate events and extreme weather events and their impact is modelled for the real estate sector, among others, affecting property values and loan-to-value ratios (LTVs). Finally, L. Neuteboom points to another relevant example for the real estate sector, PwC's Carbon Value Analyser[42], which enables the quantitative assessment of the effects of climate change policy on property values.

In its Report, the EBA furthermore details available indicators, metrics and evaluation methods that are needed for effective ESG risk management, with a focus on: (i) the portfolio alignment method, which measures how aligned an institution's portfolio is with global sustainability targets, (ii) the risk framework method (including scenario analysis), which assesses how sustainability-related issues affect the risk profile of an institution's portfolio and its standard risk indicators and (iii) the exposure method, which analyses how individual exposures and counterparties perform on ESG factors. The EBA does not prescribe the use of one of these approaches but rather sees advantages in applying a combination of results.

The Report also identifies remaining gaps and challenges in relation to assessing ESG risks. With regard to the challenges specifically, the EBA points to:

1. Uncertainty regarding the policy framework and the timing and effects of physical risks
2. Insufficient data to understand the potential impacts of ESG risks on the performance of financial assets
3. Methodological constraints related to risk management models being typically based on historical data making it difficult to calculate PD and LGD.
4. Time-horizon mismatch between 'traditional' management tools and the timeframe for the materialisation of ESG risk
5. Multi-point impact of ESG risks on institutions including potential impacts on credit losses, business models, capital adequacy, credit ratings, collateral valuations leading to higher LGD and capital and funding costs.

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40 https://hypo.org/app/uploads/sites/2/2021/11/HYPOSTAT-2021_vdef.pdf

41 https://www.unepfi.org/wordpress/wp-content/uploads/2018/07/NAVIGATING-A-NEW-CLIMATE.pdf

42 https://www.pwc.de/de/pressemitteilungen/2020/energie-und-klimaperformance-von-immobilien-carbon-value-analyser-berechnet-chancen-und-risiken.html

6. Non-linearity of ESG risks in terms of impacts.

As far as the recommendations to credit institutions and investment firms are concerned regarding the management of ESG risks, the EBA focuses on business strategies, governance and risk management. Of particular relevance for energy efficient mortgages are the recommendations regarding:

- business strategies and specifically those related to engagement with borrowers, investee companies and other stakeholders, and the assessment of the potential need to develop sustainable products or to adjust features of existing products, as a way to contribute to and ensure alignment with strategic objectives and/or limits. Significantly, the EBA refers in its Report (p.94) to the efforts under the EEMI to lay down standards for energy efficient mortgages and an EEM Label.
- the incorporation of ESG risks into risk management frameworks, and in particular those recommending:
  - The management of ESG risks as drivers of financial risks, in a manner consistent with the risk appetite, and as reflected in both the ICAAP and ILAAP frameworks;
  - The identification of the gaps financial institutions are facing in terms of data and methodologies and take remedial action;
  - The setting out of appropriate policies taking ESG risks into account for the assessment of the financial robustness of counterparties;
  - The development of risk monitoring metrics at exposure, counterparty and portfolio level.

With regard to the SREP, the EBA points to the need to reflect longer-term ESG risks in the supervisory evaluation of institutions falling under the scope of the CRR/CRD, with a focus on analysis of the business environment, the current business model, strategy and assessment of the viability and sustainability of the business model. To ensure that the SREP allows supervisors to understand the longer-term impact of ESG risks, the EBA proposes the introduction of a time horizon aligned with that of public policies and transition trends of at least 10 years to ensure that credit institutions test the long-term resilience of their business models over a sufficient period. The EBA furthermore recommends that the supervisory review should proportionately incorporate ESG risks into the assessment of the credit institution's internal governance and wide controls and that ESG risks should be incorporated as drivers of financial risks, in particular risks to capital and risks to liquidity and funding.

ECB Guide on Climate Related & Environmental Risks

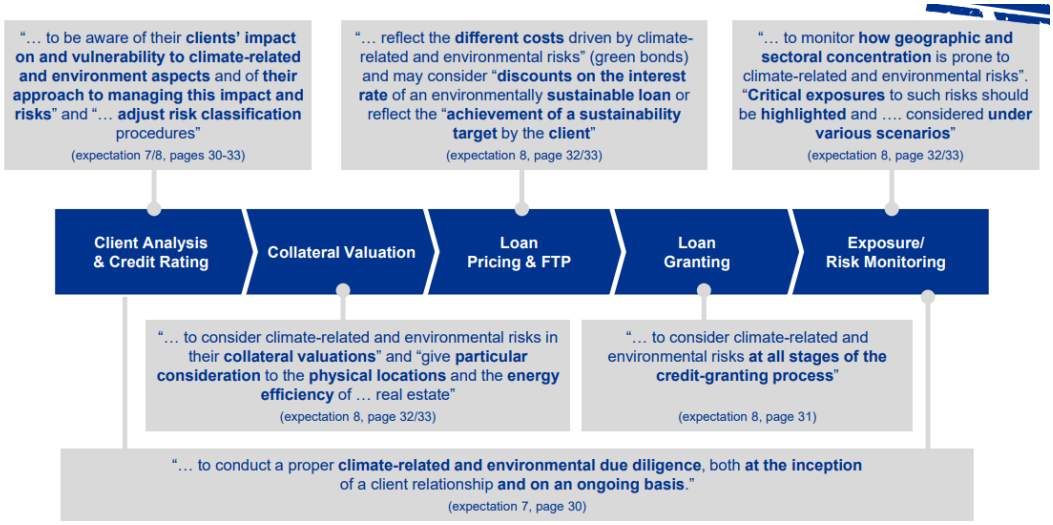
For its part, the ECB has also stepped up its focus on climate-related and environmental risks and how they are managed by financial institutions. In November 2020, the ECB published its Guide on climate-related and environmental risks[43] which describes how the ECB expects institutions to consider climate-

[43] https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.202011finalguideonclimate-relatedandenvironmentalrisks~58213f6564.en.pdf

related and environmental risks – as drivers of established categories of prudential risks – in the context of their business strategy and governance and risk management frameworks. It further explains how the ECB expects institutions to increase their transparency by enhancing their climate-related and environmental disclosures.

Of particular relevance for energy efficient mortgages amongst the ECB's 13 supervisory expectations, are expectations 7 and 8 (pages 30-33) which require the integration of climate-related and environmental risks into credit risk management and processes, aligned with the EBA Guidelines on Loan Origination & Monitoring (LOaM). In an overview document on the Guide[44], KPMG breaks down the relevant aspects of credit risk management and processes and links the two expectations to each of these:

Figure 5
KPMG analysis of integration climate & environmental risks into credit risk management and processes



Source: KPMG (2020), Climate related & environmental risks: Overview of the ECB's recently published Draft guide on climaterelated and environmental risks, (link)

In terms of follow-up, in early 2021, the ECB invited banks to conduct a self-assessment in light of the supervisory expectations outlined in the Guide and to draw up action plans on that basis. As indicated earlier, according to an analysis by the ECB of the result of this self-assessment[45], almost all banks have developed implementation plans, and many have started to progressively improve their practices, however none is close to meeting all supervisory expectations.

Based on these results, the ECB already sent individual feedback letters to banks in November 2021, pointing to the need for them to address shortcomings and

44 https://assets.kpmg/content/dam/kpmg/de/pdf/Themen/2020/06/climate-related-and-environmental-risk.pdf
45 https://www.bankingsupervision.europa.eu/press/pr/date/2021/html/ssm.pr211122~6984de0ae5.en.html

calling on them to take action. In 2022, it is conducting a full supervisory review of banks' practices, including a supervisory climate risk stress test to assess banks' climate-risk preparedness.

Clearly, the way in which banks manage climate and environmental risk will influence the subsequent supervisory dialogue, which could over time translate into SREP measures. While the ECB has indicated that these measures will be qualitative at this stage[46], it is reasonable to assume that banks which do not meet the requirements over the medium to long term in this respect could face quantitative measures i.e. capital add-ons under pillar 2, which would translate into a material risk of additional equity cost in the future. In this respect, the ECB's Guide, the EBA recommendations and future Guidelines and their update of the SREP Guidelines will be determinant in this respect.

3.2.2 The solutions

Against the background of the considerations outlined above and from the perspective of efficient mortgages, there are a number of key touchpoints where the EEMI and NEEM can offer ways to support alignment and compliance in relation to the integration of climate and environmental risks into credit risk management and processes specifically. Indeed, in many respects, the EEMI offers valuable responses to the various supervisory expectations and recommendations in this area through its long-term work to build and deploy an energy efficient mortgage product framework, data infrastructure and broader value chain which put climate considerations, and specifically energy efficiency, at their heart.

Considering some of the key points pinpointed by the EBA and the ECB, the EEMI offers a multitude of tools, blueprints, research and expertise to help lending institutions respond to this guidance and these recommendations:

Sustainable Products

Designing and providing the tools for the deployment of energy efficient mortgage products was the starting point of the Energy Efficient Mortgages Initiative in 2015 and remains the priority, alongside efforts to promote and accelerate robust and sustainable market development.

To this end, the EEMI and NEEM have focussed – and are focussing - on a number of core elements intended to support lending institutions in the development of their own energy efficient mortgages and their successful launch in the market. These actions, some of which have already been discussed earlier and others which will be explained in more detail later in this Report, include:

- A blueprint of the core elements of an energy efficient mortgage product and accompanying framework, focussed on building energy performance measurement metrics and property valuation guidelines.

[46] https://www.bankingsupervision.europa.eu/press/pr/date/2022/html/ssm.pr220127~bd20df4d3a.en.html

- An EEM definition agreed by the market after lengthy discussion and consultation, which underpins the EEM Label Convention (see box 3)
- A list of criticalities and potential solutions, identified, researched and agreed by the market, as being central to the ultimate rolling-out and scaling up of the product (see box 4).
- The EEM Label as a way to build trust and confidence in energy efficient mortgage products and promote their uptake.
- Extensive quantitative and qualitative consumer research in Germany, Hungary, Italy, the Netherlands, Portugal, Romania, Spain, Sweden and the UK to garner a better understanding of the key drivers of consumer demand, alongside a deep appreciation of what consumers perceive as valuable, with a view to designing a marketable financial prolduct.
- Behavioural optimised consumer guidance being developed under NEEM to stimulate building energy performance improvements.
- Legal opinions on the collection and processing of energy efficiency data by lending institutions, its disclosure through the EEM Label's HDT and liability considerations around future data repositories.
- Efforts to design an 'ecosystem' of processes and actors, beyond the energy efficient mortgage product itself, to secure efficient and integrated market development.
- Establishment of national EEM hubs and the testing of an optimal 'ecosystem' in market demonstrators
- An algorithm being developed under NEEM which will support tailored guidance on energy renovations to consumers, with a focus on the Nordic countries in the first instance.
- Mapping of institutional support mechanisms and identification of gaps in order to ensure optimal institutional leverage between private and public financing mechanisms.

Recently, there has been a rapid increase in the development and offer of sustainable products, including energy efficient mortgages, as indicated by the 52 labelled products on the EEM Label website[47].

Risk analysis

As indicated above, based on a comprehensive data collection infrastructure, the EEMI has conducted in-depth econometric analysis into the relationship between building energy performance and credit risk[48], and established a significant negative correlation between the buildings' energy efficiency and the probability of mortgage default specifically. Additionally, the results indicate that the degree of energy efficiency is also important matters, i.e., more energy efficient buildings are associated with relatively lower risk of default. As indicated above, recently published analysis conducted by the Energy Efficiency Financial Institutions Group (EEFIG) extends this analysis and finds similar correlations.

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47 https://www.energy-efficient-mortgage-label.org/products

48 https://energyefficientmortgages.eu/wp-content/uploads/2021/07/Italian-Correlation-Analysis.pdf & https://energyefficientmortgages.eu/wp-content/uploads/2021/07/Extended-Dutch-Correlation-Analysis.pdf

Taken together, this research provides valuable insights into the impact of building energy performance on client credit risk and demonstrates the value for lending institutions in taking account of the risk mitigating impact of building energy performance in their creditworthiness assessments.

The EEMI Master Template provides a structured manner in which to collect this data for the purposes of loan granting and also with a view to gathering relevant information on the existing loan portfolio for tagging purposes to understand the energy performance credentials of underlying collateral and the corresponding risk profile of existing clients. As indicated earlier, efforts under EEMI to understand GDPR implications related to the collection, processing and disclosure of EE data is supporting the use of the Master Template and the EEM Label's HDT in a second stage, and ongoing efforts in the Nordic Region under NEEM are examining gaps in data availability, sources to close these and automated solutions to harvest this data.

Loan Pricing

The potential for the significant negative correlation between building energy performance and credit risk to influence business strategy and loan conditions for borrowers has long been a cornerstone of the EEMI. Indeed, one of the underlying premises of the EEMI is that a negative correlation between building energy performance and credit risk could be reflected in a realignment of capital requirements for energy efficient mortgages and in turn drive a virtuous circle, according to which all stakeholders, first and foremost borrowers, derive a benefit. This benefit for consumers could, for example, be expressed in preferential loan conditions via a lower interest rate. It was this 'business case' which was the driving force behind the efforts under the EEMI to substantiate this relationship through the in-depth econometric analysis described earlier.

Collateral valuation

Very early in its analysis and research, the EEMI realised that climate-related and environmental risks may affect the value of collateral and therefore LTVs and, by extension, LGD. In the specific context of energy efficient mortgages and as elaborated above, there is compelling evidence to suggest that an energy efficient building is likely to present a lower risk in terms of value, meaning that building energy efficiency is therefore a risk factor from the perspective of banks' lending activities. EEMI research[49] published in 2018 indicates that long-standing valuation practice typically allows for the capture of common risks to value in relation to buildings e.g. flooding, condition, site or locality issues and planning risk. However, building energy ratings have not typically been a specified risk. As part of its efforts to design and develop an energy efficient mortgage product in recognition of the need to renovate the EU's aging building stock to meet the EU's climate

[49] https://www.rics.org/globalassets/rics-website/media/news/press-releases/energy-efficiency-lending-and-valuation-due-diligence-rics.pdf

targets, the EEMI developed a Checklist and Guidance[50] for property valuers, under the direction of the Royal Institution of Chartered Surveyors (RICS), to complement existing valuation practices with a specific and more detailed focus on building energy performance and its impact on property values. As explained in the EEMI research in this area mentioned above, the purpose of the checklist is to:

- provide a potential extension for instructions for secured lending
- enable valuers to reflect upon the building characteristics that impact on energy efficiency and form a judgement as to whether such characteristics present a risk reduction or increase to the security of the asset for the loan moving forward; and, by implication
- engender greater awareness of energy matters by valuers and encourage participation in upskilling
- build awareness of energy efficiency and risk among the banks' risk assessment departments, improve their skills of how to interpret valuation and Energy Performance Certificate (EPC) reports as well as learn how to challenge valuers in case of incomplete valuation reports

Importantly, the Checklist responds directly to the opportunity presented by the European Commission's proposed modifications to Article 208 of the Capital Requirements Regulation (CRR) according to which: "*Modifications made to the property that improve the energy efficiency of the building or housing unit shall be considered as unequivocally increasing its value.*" [51] (Page 120). Indeed, the Checklist provides the opportunity to capture the potentially positive impact of an energy renovation on property, supporting the demonstration of a negative correlation between building energy performance and credit risk, driven by lower loss given default as a result of an enhanced LTV.

Risk monitoring & concentration analysis

Again, by way of the EEMI Master Template with its emphasis on the collection of relevant building energy performance data, at the heart of which is the EPC, the EEMI supports lending institutions in the collection of information for the purposes of loan granting, as well as for the purposes of tagging existing loan portfolios to understand their 'sustainability' credentials and the distribution of EPCs across the underlying residential and commercial real estate collateral. This supports in understanding and managing concentration risks and strengthening resilience of loan portfolios.

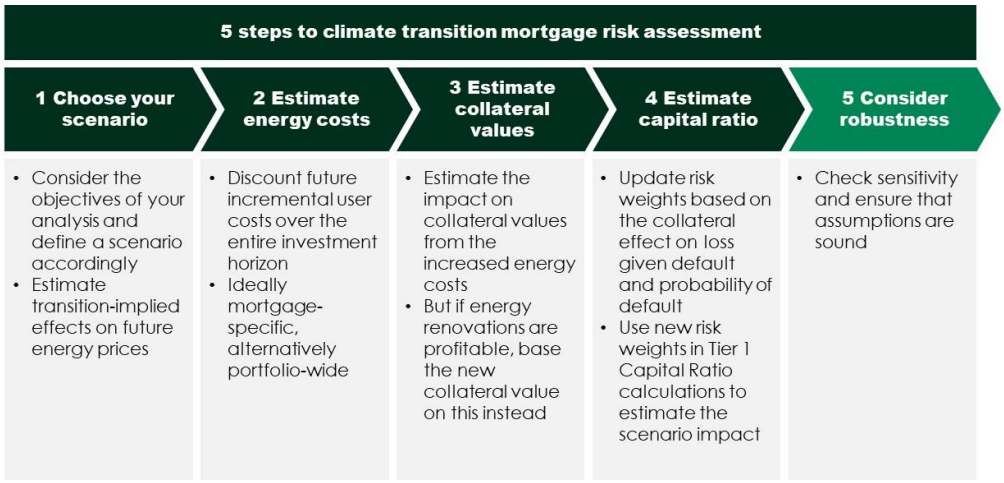
Finally, and relevant for a number of the areas related to credit risk management highlighted above is a *Guide to Climate Transition Risk Scenario Analysis for Mortgage Portfolios*[52] published by the EU-funded EeMMIP Project, part of the

[50] https://energyefficientmortgages.eu/wp-content/uploads/2021/07/EEM-Property-Valuation-Guidelines.pdf
[51] https://eur-lex.europa.eu/resource.html?uri=cellar:14dcf18a-37cd-11ec-8daf-01aa75ed71a1.0001.02/DOC_1&format=PDF
[52] https://energyefficientmortgages.eu/wp-content/uploads/2021/12/Blueprint-Transition-risk-for-mortgages_REV_EEMI-layout.pdf

overarching EEMI, which is intended to facilitate the inclusion of energy efficiency and sustainability of EEM in credit risk assessments. Specifically, Copenhagen Economics present a straightforward approach for lending institutions to transition risk scenario analysis for credit risk in mortgage portfolios. CE provide a set of concrete tools that can be used at an institutional level, to clearly identify the direct transition risks for mortgages.

As outlined in the Guide, CE's starting point is that transition risks for mortgages primarily affect collateral value, i.e. loan-to-value (LTV), and are less likely to be the direct root cause of credit losses. Therefore, the guide focusses on assessing impact on risk weights. The approach begins with a risk scenario of increasing CO2 prices, which can represent a range of transition risks. This can then be transformed into an increase in energy costs, based on the energy composition, which leads to user costs of owning the building based on the energy efficiency. These higher costs will, in turn, affect collateral value, which eventually increases risk weights. The approach can be divided up into four steps, outlined below. As a fifth step, CE recommend considering the robustness of the analysis, as assumptions made along the way will have large impacts on the obtained result.

Figure 6
Copenhagen Economics' 5 Steps to Climate Transition Mortgage Risk Assessment



Source: CE Guide to Climate Transition Risk Scenario Analysis for Mortgage Portfolios (link)

3.3 PILLAR 3 (MARKET DISCIPLINE)

Pillar 3 of the supervisory framework fosters market discipline through a comprehensive set of public disclosure requirements which allow market participants to assess, for example, a bank's material risks, capital ratio, liquidity ratios and remuneration practices.

3.3.1 The challenges/opportunities

Box 4 The challenges/opportunities of Pillar 3

Challenges/Opportunities

- The Sustainable Finance agenda in the EU is heavily focussed on ESG related disclosures, whether through legislation or implementing technical standards crafted by the European Banking Authority (EBA).
- These disclosure requirements mean that banks need to have a detailed and accurate understanding, on an ongoing basis, of the 'sustainability' credentials of their loan books with a view to disclosing these to the market in line with the various disclosure requirements.
- The Green Asset Ratio (GAR) in particular will be decisive for the vast majority of banks in the EU.

Solutions

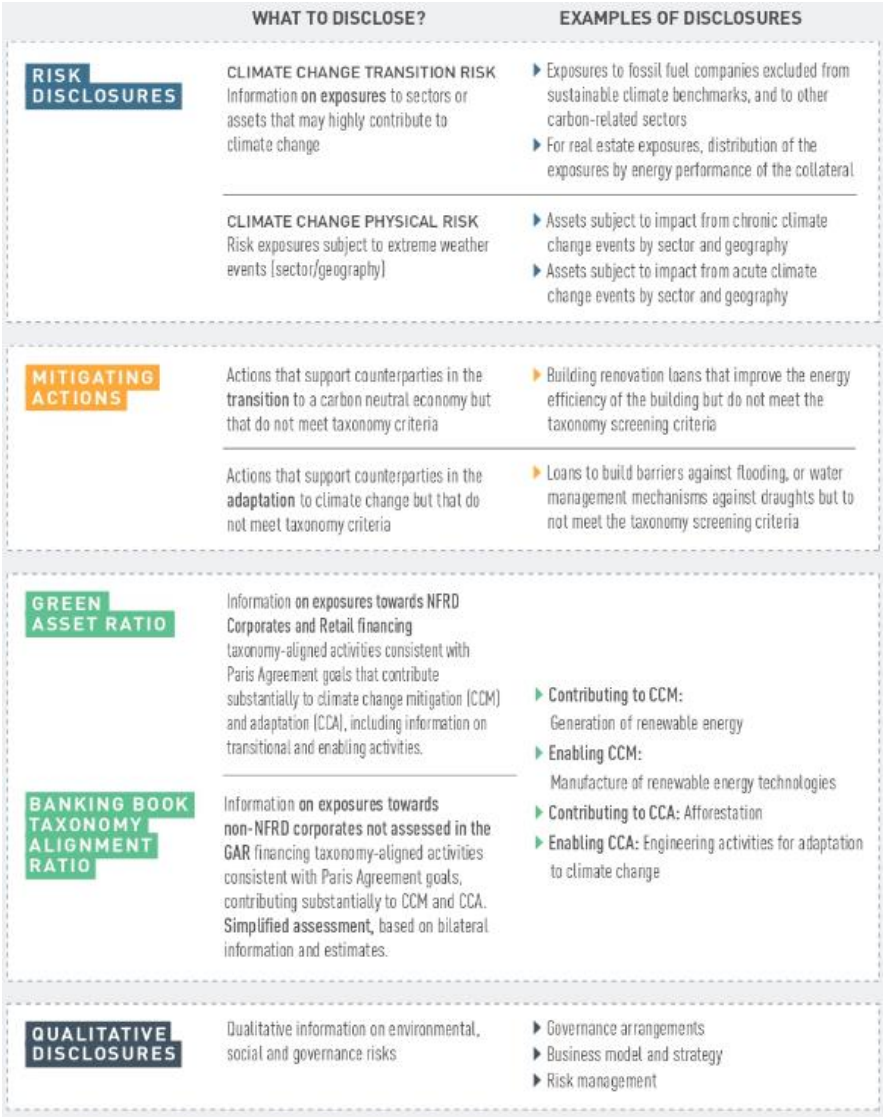
- EEMI Master Template to collect relevant information for EEM loan granting purposes, as well as for the purposes of auditing existing mortgage loan portfolios with a view to meeting pillar 3 - and other relevant - disclosure requirements.
- EEM Label and its HDT to support disclosure efforts on an aggregated level to build and sustain confidence in the EEM market.
- EEMI efforts to provide lending institutions with the tools and infrastructure to offer EEM in a sustainable and integrated manner which will help 'green' loan books and deliver a stronger GAR and BTAR.

The Sustainable Finance agenda in the EU for its part is heavily focussed on ESG related disclosures, with the EU Taxonomy, the Sustainable Finance Disclosure Regulation (SFDR) and the Non-Financial Reporting Directive (NFRD), shortly to become the Corporate Sustainability Reporting Directive, largely setting the regulatory tone. In recent months we have also seen the emergence of a multitude of climate and ESG risk disclosure requirements crafted by the EBA in its binding final draft implementing technical standards (ITS) on Pillar 3 disclosures on ESG risks[53] as a direct response to the requirements laid down in Article 449a of the Capital Requirements Regulation. The EBA summarises these disclosures in the following infographic[54]:

[53] https://www.eba.europa.eu/sites/default/documents/files/document_library/Publications/Draft%20Technical%20Standards/2022/1026171/EBA%20draft%20ITS%20on%20Pillar%203%20disclosures%20on%20ESG%20risks.pdf

[54] https://www.eba.europa.eu/sites/default/documents/files/document_library/News%20and%20Press/Communication%20materials/Infographics/ESG%20disclosure/1026178/EBA%20summary%20of%20ESG%20disclosures%20-%20Pillar%203.jpg

Figure 7
EBA Summary of ESG Disclosures – Pillar 3



Source: EBA Summary of ESG Disclosures-Pillar 3 (link)

At the heart of these requirements is the Green Asset Ratio (GAR), according to which banks subject to the NFRD must disclose their assets financing taxonomy-aligned activities as a share of their total assets. In alignment with the year-end 2023 application date for GAR disclosures under the European Commission's Taxonomy Delegated Act, the application date for the GAR disclosures under the pillar 3 framework is 2024 for data as of end 2023. Additionally, in its binding standards, the EBA also recently announced the introduction of a separate "banking book taxonomy alignment ratio" (BTAR) mentioned in figure 7, which will take effect from June 2024 and cover all of a lending institution's lending portfolio. This will capture exposures to companies which are not subject to NFRD reporting obligations (SMEs and other non-NFRD corporates) and are therefore excluded from

the calculation of the GAR, allowing lending institutions to capture more exposures and show a potentially more complete picture of the Taxonomy alignment of their balance sheets.

While the BTAR will undoubtedly add value for the reasons outlined above, the GAR is widely anticipated by the market to be the more determinant of the two for the vast majority of banks in the EU[55]. This assessment is particularly significant in Denmark, where in most cases almost 50% of a banks' mortgage lending is to SMEs (companies with below 500 employees) when they are financing buildings. This type of mortgage lending to SMEs in Denmark is typically to companies financing residential multi-family housing or office buildings. Also mortgage lending to the large Danish social housing sector is categorized as lending to SMEs. This means that almost 50% of Danish banks' mortgage lending activity - since it is focussed on non-NFRD corporates - will not be eligible for the GAR. This lending will instead be reported through the BTAR. Worth highlighting here is the fact that the European Commission commits to reviewing the decision to exclude SME exposures from the GAR calculation by 30 June 2024 in Article 9 of the Delegated Regulation on Article 8 of the Taxonomy Regulation[56].

Other relevant pillar 3 disclosures as described in figure 7 relate to information on climate change transition risk e.g. the distribution of real estate exposures in a bank's loan book according to energy performance of the underlying collateral, by way of the Energy Performance Certificate (EPC), and on mitigating actions e.g. building renovation loans that improve the energy efficiency of the building but do not meet the Taxonomy's Technical Screening Criteria.

These disclosure requirements mean that banks need to have a detailed and accurate understanding, on an ongoing basis, of the 'sustainability' credentials of their loan books with a view to disclosing these to the market in line with the various disclosure requirements.

3.3.2 The solutions

As described in detail above, the EEMI Master Template in the first instance, with the EPC at its heart, offers lending institutions a structured way to collect information on the energy performance of real estate collateral for energy efficient mortgage loan granting purposes, as well as for the purposes of auditing and tagging their existing mortgage loan portfolios with a view to meeting the pillar 3 - and other relevant - disclosure requirements. These standardisation efforts are supported by the ongoing analysis under NEEM and the broader EEMI to improve the availability of energy efficiency data and access to it, as discussed above.

The EEM Label and its HDT support disclosure efforts on an aggregated level, setting a publicly accessible quality and transparency benchmark to build and

[55] https://think.ing.com/articles/bank-pulse-btar-to-supplement-gar-as-taxonomy-alignment-measure#a6
[56] https://ec.europa.eu/finance/docs/level-2-measures/taxonomy-regulation-delegated-act-2021-4987_en.pdf

sustain confidence in the energy efficient mortgage market on the part of consumers, regulatory authorities and investors.

As will be shown in more detail below, in a broader sense, the EEMI is focussed on stimulating the demand for energy efficient mortgages and providing lending institutions with the tools and infrastructure to offer these in a sustainable and integrated manner. This will ultimately help banks to 'green' their loan books, supporting the climate transition and improving the resilience of their balance sheets in the interests of financial stability. This 'greening' will also be reflected in a stronger GAR and will be visible through other disclosure requirements, responding to the ever-growing investor demand for sustainability.

CHAPTER 4
RETAIL ACTIVITIES

While our previous assessment indicated that the most significant impacts of the sustainable finance agenda will be observed across the three pillars of the supervisory framework, as described in the section above, banks' retail activities are of course of fundamental relevance as well to the overall agenda and will be impacted by current and future actions in this area, presenting challenges and opportunities.

In this section, we:
- Consider the key pieces of legislation and initiatives which will likely impact banks' retail activities and in particular their energy efficient mortgage lending activities, with a focus on the Renewed Sustainable Finance Strategy, the Energy Performance of Buildings Directive (PEBD) and the potential for an EU Ecolabel for financial products.
- Present the potential associated challenges and opportunities for banks in this area.
- Detail the wide variety of solutions presented by the EEMI and NEEM which could offer a fast track for banks to respond to these challenges and make the most of the opportunities.

4.1.1 The challenges/opportunities

Box 5 The challenges/opportunities of Retail Activities

Challenges/opportunities

- Recently, the focus of the EU Sustainable Finance agenda has been extended to developing an inclusive sustainable finance framework in which citizens, as consumers, can access sustainable finance opportunities.
- Subsequent actions under the Renewed Sustainable Finance Strategy together with efforts to upgrade the Energy Performance of Buildings Directive (EPBD) will inevitably put pressure on banks to step up and respond to the inherent 'calls for action' to support the EU's citizens, whilst managing the potential impacts of other proposed actions on their existing loan portfolios.
- For those who respond quickly to these challenges, there will also be significant business development opportunities.

Solutions

- With the inherent shift towards retail financial services products, the European Commission's focus aligns in many respects with the objectives of the EEMI.
- The EEMI offers a wealth of tools, research and expertise and a vast network of relevant stakeholders, to support banks in their retail activities and specifically in the origination of EEM, to meet the expectations and associated challenges and opportunities in this area:
  - EEM product blueprint
  - EEM definition which underpins the EEM Label Convention (see box 3)
  - A list of criticalities and potential solutions for the ultimate rolling-out and scaling up of the product (see box 4).
  - EEM Label as a way to build trust and confidence in energy efficient mortgage products and promote their uptake.
  - Extensive quantitative and qualitative consumer research in Germany, Hungary, Italy, the Netherlands, Portugal, Romania, Spain, Sweden and the UK to garner a better understanding of the key drivers of consumer demand.
  - Behavioural optimised consumer guidance being developed under NEEM to stimulate building energy performance improvements.
  - GDPR compliance analysis and guidance related to the collection, processing and disclosure of energy efficiency data
  - Efforts to design an 'ecosystem' of processes and actors to secure efficient and integrated market development.
  - Establishment of national EEM hubs and the testing of an optimal 'ecosystem' in market demonstrators
  - An algorithm being developed to support tailored guidance on energy renovations to consumers
  - Mapping of institutional support mechanisms and identification of gaps in order to ensure optimal institutional leverage between private and public financing mechanisms.

Renewed Sustainable Finance Strategy

Until recently, the Sustainable Finance agenda in the EU focussed largely on harnessing the potential of and preparing financial institutions and investors for the climate transition through a plethora of inter-connected reporting and disclosure

requirements, at the heart of which is the EU Taxonomy. More recently, and through the Renewed Sustainable Finance Strategy published in July 2021[57], attention is turning also to developing an inclusive sustainable finance framework in which citizens, as consumers, can access sustainable finance opportunities and support the climate transition.

From the perspective of energy efficient mortgages, there are two planned actions described in the Strategy, to be delivered by 2022, which are of direct relevance:

1. *The European Commission's plans to ask the EBA for an opinion on the definition and possible supporting tools for green retail loans and green mortgages.*

Depending on the form it takes, a definition of "green mortgages" proposed by the EBA could of course have the potential to significantly influence the further evolution of energy efficient mortgage products, as well as key outputs of the EEMI directly linked to the EEMI definition, in particular, the EEM Label. Given the primacy of the EU Taxonomy in all sustainable finance related legislation to date and moving forward, it is most probable that any such EU definition would be closely aligned with the technical screening criteria.

2. *The European Commission's plans to explore ways to support the uptake of energy efficient mortgages in the framework of the Mortgage Credit Directive Review and launch an EU-wide information campaign addressed to businesses and households highlighting the features and benefits of such loans.*

With the Review of the Mortgage Credit Directive already several years in the pipeline, discussions on how to use the Directive as a vehicle to stimulate energy efficient mortgages, in line with the work of the EEMI, have been ongoing for some time. The specific reference to the Review in the Renewed Sustainable Finance Strategy formalised these plans and indicated a deadline by which the assessment should be conducted (2022).

To date, discussions have touched upon the potential for positive references to be made to energy efficient mortgages in the Directive in order to stimulate their supply and uptake. One important consideration, however, is that the high-level, principles-based nature of the Directive should be respected in the interests of consistency and coherence and to safeguard the well-performing nature of the Directive so far. The inclusion of references relevant to energy efficient mortgages in certain provisions, for example, a specific feature of the underlying collateral i.e. its energy performance, or particular information to be collected for credit assessment purposes i.e. energy bills, would add a level of prescription which is otherwise not present in the Directive, potentially creating a distortion. These discussions are ongoing at the time of writing and for the time being no conclusions can be drawn on the form any such references would take.

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[57] https://eur-lex.europa.eu/resource.html?uri=cellar:9f5e7e95-df06-11eb-895a-01aa75ed71a1.0001.02/DOC_1&format=PDF

Energy Performance of Buildings Directive

In parallel to these developments, in December 2021, the European Commission published a proposal for a recast Energy Performance of Buildings Directive (EPBD) as a key follow-up action to the European Commission's 'Renovation Wave' strategy which is intended to boost energy renovation of buildings in the EU.

With its focus on achieving a zero-emission and fully decarbonised building stock by 2050, increasing the rate of renovation to this end and mobilising financing, the Directive will have a significant impact on private finance and, as a result of the intrinsic link between buildings and mortgages, on energy efficient mortgages therefore more specifically.

Significantly, the EPBD recast provides for better quality, more comparable and publicly accessible Energy Performance Certificates (EPCs) which are clearly fundamental for financial institutions. In a recently published response to a European Commission 'Have Your Say' Consultation[58], the Mortgage Industry therefore welcomes many of the proposed actions which will support financial institutions in reaching their retail and funding potential, but highlights four important considerations:

- Access to EPC databases should not be hindered by national legislation which in some countries is currently preventing open access to existing registers, due to different GDPR interpretations. In this respect, the EMF-ECBC commissioned legal advice on a potential amendment to the EPBD in order to secure access to all energy performance data of buildings necessary to determine EU Taxonomy alignment and the permission to process that data[59].
- The standardisation of EPCs will allow for the comparison of building energy performance across the EU. In this respect, digitalisation presents an opportunity to enhance the comparability and accuracy of EPCs by metering real energy performance and the EPBD should allow for this.
- Linked to the point above and regarding the requirement for "on-site visits" in Art. 16, it should be possible to issue EPCs by whatever means national legislation or practice deems adequate, including by digital means.
- Regulatory stability regarding energy performance thresholds is fundamental for the EU's citizens and financial institutions.

A further innovation of the EPBD recast is the introduction of Minimum Energy Performance Standards (MEPS), which require the renovation of the worst performing buildings i.e. those in Energy Performance Certificate (EPC) classes G or F. While it is increasingly clear why measures of this kind might be necessary to achieve climate neutrality in buildings and likely that there will be significant business opportunities for financial institutions to finance the renovation of these buildings, this approach nonetheless brings with it certain concerns in the absence of strong

[58] https://hypo.org/app/uploads/sites/3/2022/03/Final-EMF-ECBC-Comments-to-EPBD-31.03.22.pdf
[59] https://hypo.org/app/uploads/sites/3/2022/03/EMF-ECBC-Proposal-for-an-Amendment-to-EPBD-recast-31.03.22.pdf

incentives and/or subsidies for borrowers and lending institutions. Indeed, there is a risk of creating stranded assets, with negative social and financial implications for borrowers (especially where renovation is not economically viable (which is often the case for the most fragile households)) and financial institutions, that could undermine social and financial stability.

From a financial institution and energy efficient mortgage perspective, it is vital, for example, that the objectives of the EPBD recast are aligned with the EU Taxonomy requirements in order to support the mobilisation of the private finance that will be needed to respond to these MEPS. For example. where a 30% PED reduction is achieved in a renovation, the entire building and thus the entire loan for its acquisition should be Taxonomy compliant. Any other approach could distort lending institutions' strategy on renovation financing, resulting in higher borrowing costs or customer exclusion.

Finally, the Proposal introduces the concept of "Mortgage Portfolio Standards" as defined in Article 2(36), intended to incentivise lenders *"to improve the energy performance of their portfolio of buildings, and encourage potential clients to make their properties more energy performing"*[60]. While lending institutions can indeed encourage borrowers to renovate their real estate assets by means of specific instruments, such as energy efficient mortgages, an objective which is at the forefront of the EEMI and EEML, lenders are not the owners of the real estate assets that are used as collateral for mortgage loans in their portfolios and cannot themselves *"improve the energy performance of their portfolio of properties"*. Rather it is the prerogative of borrowers, as owners or users of said assets, to decide on the renovation and potential energy performance improvement of their properties. Applying an approach of this kind to the mortgage business represents, for the reasons described above regarding ownership and responsibilities and furthermore without appropriate and efficient access to EPC data, an over-simplification and could limit consumer access to finance and hinder the Industry's ability to support the Renovation Wave.

At the time of writing in May 2022, the EPBD recast is currently undergoing legislative scrutiny by the European Parliament and Council of Europe, therefore the extent to which the actions proposed by the European Commission will remain in their current form remains to be seen.

Ecolabel

A further EU initiative which has the potential in the future to impact on the granting of energy efficient mortgages is the draft EU Ecolabel criteria for financial products[61], which is intended to stimulate investment in Taxonomy-aligned environmentally sustainable activities. Concretely, the EU Ecolabel will only be granted to financial products where the underlying company being invested in conducts Taxonomy-aligned activities.

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60 https://ec.europa.eu/energy/sites/default/files/proposal-recast-energy-performance-buildings-directive.pdf
61 https://susproc.jrc.ec.europa.eu/product-bureau/product-groups/432/home

For the time being, the European Commission is developing criteria for retail financial products such as equity funds, bonds funds and saving accounts, but it is anticipated that criteria could also be developed with a view to labelling 'green' mortgages. If and when this is the case, it will be important to secure alignment between the EEM Label and a future 'EU ecolabel' for green mortgages and position the EEM Label as the benchmark in this area.

4.1.2 The solutions

Through the actions from the European Commission described above in the Renewed Sustainable Finance Strategy, the focus of the EU policy agenda has been extended and placed squarely on the EU's citizens as retail consumers in the context of sustainable finance and, as a result, on retail financial services products, including mortgages as highlighted. The revisions to the EPBD, in particular the minimum energy performance standards (MEPS) for the EU's worst performing buildings, also place a focus on the EU's consumers as homeowners, and again, as a result, on retail financial services products, and specifically, energy efficient mortgages, as a way of supporting homeowners in financing the necessary renovations to their homes. Collectively, the variety of actions outlined above will almost certainly present lending institutions with significant business development opportunities but also put pressure on them to step up and respond to the inherent 'calls for action' to support the EU's citizens, whilst managing the potential impacts of other proposed actions on their existing loan portfolios.

With this inherent shift towards retail financial services products, the European Commission's focus now aligns in many respects with the objectives of the EEMI, which, since its inception in 2015, has focussed on harnessing the potential of the mortgage industry to deliver financing solutions to consumers to fund the energy efficient improvement of their homes.

As a result of its work since 2015, the EEMI offers a wealth of tools, research and expertise, as well as a vast network of relevant stakeholders, to support banks in their retail activities and specifically in the origination of energy efficient mortgages, to enable lending institutions to meet the expectations and associated challenges and opportunities of the policy agenda in this area.

4.1.3 EEM Product Framework & definition

The starting point for the EEMI in 2015 was the design of the key elements of an energy efficient mortgage product and accompanying framework, focussed on building energy performance measurement metrics[62] and property valuation guidelines[63] as described above. It was this work that also led to the elaboration of the EEM definition in 2018, when it became clear that it was necessary to develop a common market understanding of what an energy efficient mortgage is

[62] https://energyefficientmortgages.eu/wp-content/uploads/2021/07/EEMI-Energy-Performance-Indicators.pdf
[63] https://energyefficientmortgages.eu/wp-content/uploads/2021/07/EEM-Property-Valuation-Guidelines.pdf

for the purposes of market development and transparency. This definition was the result of several rounds of discussion with and consultation of lending institutions across the EU, and today it underpins the EEM Label Convention (see box 6) (more on the EEM Label below).

As indicated above, there are plans at EU level to ask the EBA for advice on a definition of green loans and green mortgages and investigations being conducted in the context of the MCD Review. Close and ongoing dialogue with the European Commission and EBA on this and related issues will be critical in the months ahead to ensure consistency and secure work and efforts already undertaken since 2015 under the EEMI. Indeed, given the wide-spread acceptance of the EEM definition and its role at the heart of the EEM Label, it would be optimal for the EEMI EEM definition to be recognised from a legislative perspective.

Box 6 EEM Convention

EEM Label Convention

Energy Efficiency Mortgage (EEM) are intended to finance the purchase/construction and/or ren-ovation of both residential (single family & multi-family) and commercial buildings where there is evidence of: (1) energy performance which meets or exceeds relevant market best practice standards in line with current EU legislative requirements; and/or (2) an improvement in energy performance of at least 30%.

This evidence should be provided by way of a recent Energy Performance Certificate (EPC) rating or score, complemented by an estimation of the value of the property according to the standards required under existing EU legislation. It should specifically detail the existing energy efficiency measures in line with the EEM Valuation & Energy Efficiency Checklist.

Lending institutions are committed to providing regular information enabling investors to analyse the Energy Efficient Mortgage products, following the Harmonised Disclosure Template.

In the context of the EEM Label the term "mortgage" refers to residential and commercial property loans which fall within the scope of the Capital Requirements Regulation (Regulation 2013/575/EU) and/or Mortgage Credit Directive (Directive 2014/17/EU) or under equivalent legislation outside of the EEA.

Source: Energy Efficient Mortgage Label website (link)

4.1.4 List of criticalities & solutions

A further early outcome of extensive discussions with and consultation of lending institutions from 2018 onwards resulted in the development of a list of criticalities and potential solutions, identified and agreed by lending institutions, investors, building and energy experts and data providers, as being central to the ultimate rolling-out and scaling up of the product (see box 7). This list provides lending institutions and other relevant players with a valuable set of insights into challenges

experienced and reported by the market, as well as potential solutions to overcome them.

The list has also instrumental in guiding the further evolution of the EEMI, giving rise to related Projects e.g. EeMMIP, NEEM and TranspArEENs, to address challenges not only at EU level, but also in a specific national or regional or sectoral context, and in targeting advocacy activities, both at national and European level. As detailed elsewhere in this Report and also elaborated below, efforts have been undertaken to respond to many of these criticalities with several concrete market-led research and tools offering solutions to promote market development.

Box 7 List of Criticalities & Solutions regarding EEM product and market developments

Criticalities

Customer Experience & Bank Processes
• Lack of awareness among consumers/borrowers and lending institutions about added value of EEMs and investment in energy performance
• Potential complexity of journey (energy advice) and additional process costs (EPC, valuation and energy certification)
• Lack of coordination of and between all relevant partners (government & institutions, utilities, energy advisors)

Asset Eligibility / Impact Reporting
• Lack of harmonised framework for impact reporting
• Fragmentation of energy performance criteria and targets relative to scope of EEM and asset eligibility
• Current lack of robust quantitative evidence to justify lower capital requirements
• Risk of national-level regulatory add-ons off-setting any advantages for lending institutions in terms of capital relief

Data & IT
• Lack of publicly available and accessible EPC data in a digital format
• Lack of quality and representative data (limited data history)
• Lack of data harmonisation (definitions & methodologies), consolidation and comparability (in respect of and between mortgage, valuation & energy efficiency data)
• Challenges of dynamic data monitoring and analysis of non-bank data (energy savings and real-time energy consumption)
• Challenges of necessary IT system updates and implementation costs (in terms of money, time and expertise)

Possible Solutions

Borrower/Consumer Experience & Product Processes
• Awareness raising
  • Design of common EU branding under EEMI and with public institutions
  • Promotion of a common consumer/borrower survey consisting of a limited number of questions with the involvement of national banking associations and organisation of targeted events aimed at increasing consumer/borrower awareness of added value and incentives

• Reinforcing the business case
  • Highlighting of the cost-effectiveness of energy efficiency investments (via partner-ships, the use of energy efficiency calculators and comparison websites) and crea-tion of online guide and one-stop information database on energy efficiency
  • Promotion of real-time understanding by building owners of the energy performance of their buildings (smart home solutions, IOT and FinTech solutions)
  • Development of EPC subsidisation scheme

• Product processes
  • Basing of EPC on latest methodologies according to current EU legislation

- Integration of energy efficiency criteria in valuation reports and use of a model to at-tribute a temporary EPC label to each property
- Provision of appropriate training packages tailored according to different EEM stake-holders (e.g. to bankers, valuers, energy advisors)
- Investigation and integration of relevant policy actions and regulations (subsidies and market regulations on energy efficiency) in the process

Partnership

- Building of partnerships with ESCOs to monitor energy savings and provide renova-tion work guarantees
- Accreditation of contractors e.g. installers and SMEs, and use of nationally-recognised quality labels for work undertaken by these contractors
- Engagement of national & European institutions to approach public authorities with a single voice

Asset Eligibility/Impact Reporting

- Development of harmonised framework for impact reporting
- Highlighting of positive regulatory impacts of EEMs from a macro-prudential perspective, including from an overall financial stability perspective
- Highlighting of positive impacts in terms of climate goals, energy security and growth and innovation
- Grandfathering of existing green loans to support accumulation of data history

Data & IT

- EPC
  - Highlighting of positive impacts in terms of climate goals, energy security and growth and innovation
  - Grandfathering of existing green loans to support accumulation of data history
- Technical issues
  - Establishment of a unique key identifier for all buildings to collect relevant information and to provide the data for each energy consumption benchmark (data freely available on an anonymised basis)
  - Creation of an on-line common, harmonised data portal with easy real-time access, clear structure and definition of each data point and unique key identifier (EeDaPP)

Source: EEMI

EEM Label

One of the priority responses to the criticalities identified was the design and deployment of the EEM Label mentioned above. As already described above, with its focus on identifying EEM products in lending institutions' loan portfolios and disclosing data on their 'sustainability' credentials, the Label, underpinned by the HDT and framed by the GDPR compliance guidance, has the potential to support lending institutions in responding to a number of different challenges and obligations, whether this be complying with extensive and varied disclosure requirements, supporting investor due diligence or, as is relevant in this section, reaching consumers and building trust and confidence in EEM which will support their supply and uptake.

From a retail perspective, the objective of the EEML is to give lending institutions the opportunity to raise awareness around their energy efficient (mortgage) loan offerings and help private and professional customers navigate to these. As noted above, at the time of writing, 38 lending institutions in 14 countries have labelled 52 products through the EEM Label, a number which is growing all the time[64].

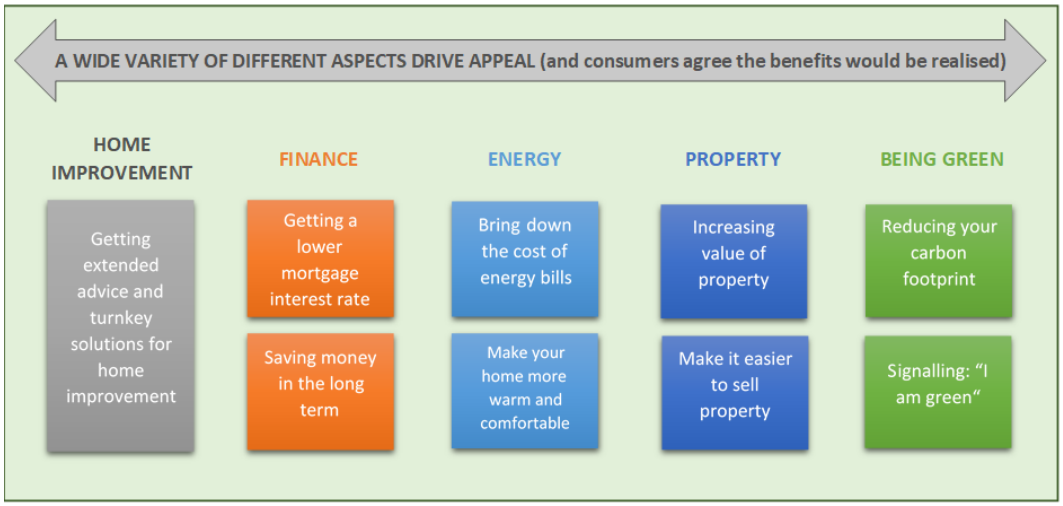
Experience with the Covered Bond Label[65] has shown that where a market-led Label is sufficiently robust and delivers transparency and quality, it can be well-respected by market participants, policymakers and regulatory authorities. As such, the EEM Label can act as the market benchmark, for example in the context of a potential 'EU ecolabel' for green mortgages, recognising and rewarding the efforts of those lending institutions which are already labelling their products and actively disclosing data through the HDT. In order to secure the position of the EEM Label squarely in this role, efforts are focused on continued on-boarding of lending institutions to the EEM Label, building the reputation of the Label in close cooperation with market stakeholders and maintaining close ongoing dialogue with the European Commission on relevant policy files and initiatives.

Consumer research

The efforts described above to understand the main challenges to be addressed in order to promote the efficient and accelerated deployment of energy efficient mortgages were reinforced in 2018 by comprehensive consumer research[66] in Germany, Italy, Sweden and the UK. Indeed, understanding the key drivers of consumer demand, alongside a deep appreciation of what consumers perceive as valuable, constitute a cornerstone of designing a marketable financial product. The research conducted indicated that the appeal, relevance and understandability of EEM are generally strong across 3 (Italy, Sweden and UK) of the 4 markets surveyed (reception in Germany was less strong because of a competing government-backed scheme). This research was later extended to include Spain and Portugal[67] and encouragingly indicated that there is also sizeable appeal for EEMs across both of these markets. This consumer research generated key insights to support the basis of EEM market development, as detailed in Figure 8.

[64] https://www.energy-efficient-mortgage-label.org/issuers/directory
[65] www.coveredbondlabel.com
[66] https://energyefficientmortgages.eu/wp-content/uploads/2021/07/Consumer-Research-DE-IT-SE-UK-2018.pdf & https://energyefficientmortgages.eu/wp-content/uploads/2021/07/EON-Green-Mortgages-Debrief-with-appendices-051218.pdf
[67] Commissioned and funded by UCI.

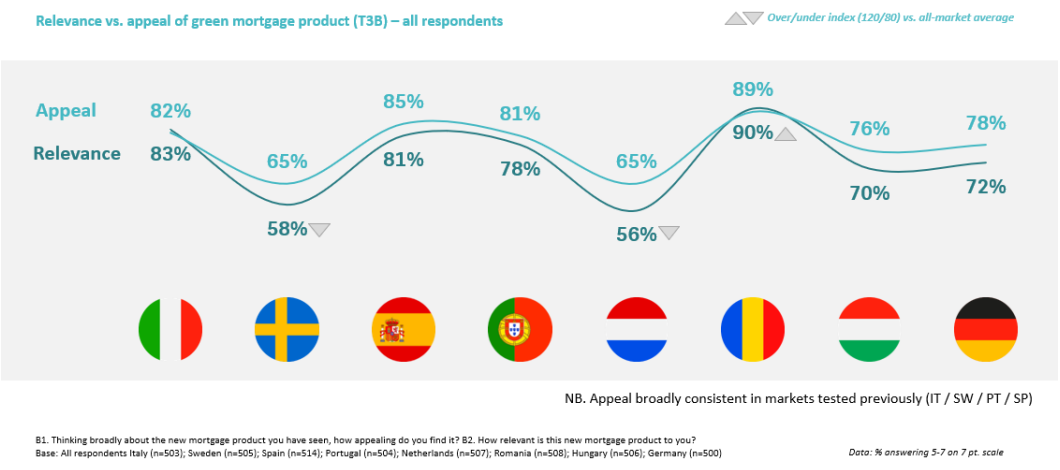
Figure 8
Key insights for EEM market development.



Source: Creating an Energy Efficient Mortgage for Europe: Consumer Research Insights (link)

By combining the qualitative learnings, E.ON and Basis were able to devise an optimised proposition which was tested with consumers in the markets in question with very broad, strong appeal and relevance across markets:

Figure 9
Relevance vs. appeal of green mortgage product



Source: Constructed from research results (link & link)

Most recently, the existing research has been extended from a quantitative perspective in the markets already surveyed and three additional markets have been added, namely Hungary, the Netherlands and Romania[68]. In these three

[68] https://energyefficientmortgages.eu/wp-content/uploads/2022/04/EeMMIP-2022-Complete-Report-Consumer-Insights-Green-Mortgage-Propositions-Feb-2022.pdf

markets, specific qualitative research was also conducted, extending that previously carried out in the other markets.

The extended research which was conducted with a total of 4000 consumers in the 8 markets mentioned above provides valuable insights as follows:

- Across European markets, there is a need for flexibility and transparency in the development of energy efficiency mortgages. There are significant differences between markets in terms of context and outlook, and within markets households are at different stages in their journey, pointing to the importance of a highly flexible proposition which responds to the diverse needs.
- Simplicity is also a key requirement. Especially in eastern Europe, where there can be greater cynicism around the type of bureaucracy implied by things like EPC certification. The easier the process, and the more control can have, the greater the reassurance.
- Markets with higher mortgage costs may expect larger discounts – such that the discount represents a meaningful proportion of the total interest burden. Against a 5% interest rate, a 0.3% discount feels underwhelming; but something closer to 0.7-1.0% becomes quite meaningful.
- There is also scope for government/EU initiatives to aid in take up of green mortgage products – the impact of a clearly communicated initiative can be seen in Italy with the Superbonus scheme, which combines with the benefits of the Green Mortgage to give consumers a wide-ranging, appealing proposition.
- Lastly, the proposition has the greatest breadth and the greatest potential impact if it incentivises consumers not only to choose more efficient homes, but also to make their own home more efficient – leveraging the financial benefits of the product alongside environmental benefits is likely to have greatest impact on take-up.

Overall, these results are important because they can inform the formulation of targeted EEM value propositions delivered to different market segments and adapted for different EU mortgage markets.

Behavioural Guidance

A particular innovation of NEEM which complements this consumer research are efforts to deploy behavioural optimised guidance to stimulate building energy performance improvements. The intention is to provide financial institutions with the necessary insights in order to be able to develop tools/products for households and SMEs which address behavioural barriers to investment in building energy efficiency, particularly renovations. Indeed, many profitable renovations are not undertaken due to behavioural barriers. In particular, *lack of natural decision points* is the main behavioural barrier that needs to be overcome before other barriers become relevant; indeed, the first challenge is to encourage the house or company owner to actually *consider* renovating. Once this step has been achieved, other behavioural barriers potentially come into play, including: lifestyle renovations are rated higher, high perceived complexity, uncertainty

about economic gain, low trust and transparency, lack of awareness, limited information, inertia and invisible improvements. By drawing on these insights gained from behavioural barrier mapping and applying behavioural insights, NEEM will focus on developing solutions that are targeted at specific consumer segments and types of owners, country by country in the Nordic Region region. NEEM will also provide valuable consumer behavioural insights for the other EEMI national hubs (see next paragraph).

EEM Ecosystem: Market Demonstrators & National Hubs

Indeed, experience and learning gained during the course of the EEMI highlighted that the development of the EEM market over an accelerated timeframe (in line with the EU's ambition timetable for energy saving) goes far beyond simply designing the product and delivering the framework. Over time, it has become clear that the specific nature of the market in energy efficiency finance and its challenges requires the design and deployment of an 'ecosystem' bringing together the right actors, processes, products and relationships to coordinate and support robust and integrated market development. And here again, the EEMI offers important support to lending institutions. By way of market demonstrators in Italy and the UK and the existing EEM national market hubs[69], the EEMI is researching and designing optimal end-to-end customer journeys and EEM life-cycles, from origination to asset eligibility and risk assessment as well as dedicated EEM bond issuance. This is intended to deliver a solid, tested blueprint which can be used, and adapted as necessary, to scale up the roll-out of EEM across the EU and potentially beyond.

NEEM Core Solution

A very relevant deliverable of NEEM, which integrates with the concept of the 'ecosystem' and responds directly to a number of the behavioural barriers described, is what the Project is referring to as its 'core solution', namely an algorithm which will provide tailored consumer guidance on energy renovations. The recommendations are centred around three key steps:

1. Estimate actual energy efficiency performance based on hourly energy consumption and weather data (remove behavioural element) and estimate wind tightness and insulation: Based on hourly energy consumption and weather data, the algorithm is able to estimate EPC labels without any consumer inputs.
2. Estimate energy renovation costs and savings for different level of energy labels for the specific building: capital costs of energy renovation and energy savings on the energy bill are calculated between each energy performance certificate.
3. Find optimal energy label and give concrete recommendations for renovation: Optimal level of energy renovations is when marginal savings on energy

[69] National market hubs have been established in BE, ES, IT, NL, The Nordics (DK, NO & SE through NEEM) and the UK to develop implementation actions and identify best practice standards taking into account local policy- market- and technological developments.

bill equals marginal capital costs of energy renovation and NEEM recommends renovating up to the energy label leading to highest possible net savings.

In terms of next steps, the intention is to test the solution on larger datasets across the Nordic countries, as well as analyse the extent to which real-time data can be integrated into the algorithm and complemented with data from several energy sources. The potential of applying this solution to portfolio wide analyses will also be considered.

Institutional Coordination

Finally, and in parallel, the EEMI is also engaged in ensuring optimal institutional coordination. Energy efficient mortgages are primarily intended as a stand-alone, private financing mechanism, independent of public funding. However, there is significant potential to accelerate market development and reinforce the mechanism through institutional support and public policy alignments, whether this is on international, European, national, or local levels. This institutional support could take the form of complementary public authority incentives or even direct intervention in the mechanism to reduce transaction costs for pilot lending institutions. The EEMI Advisory Council[70], which brings together regional, national, European and international authorities and institutions, is an important enabler of a favourable legal and business environment and a source of guidance to ensure coherence between the Initiative's actions and the political priorities of the international community.

[70] https://energyefficientmortgages.eu/advisory-council/

CHAPTER 5
FUNDING ACTIVITIES

Long before the European Commission and other European authorities turned their attention to Sustainable Finance, capital markets were increasingly gearing up towards sustainability, as investors started to take a keen interest in the green credentials of the businesses, they were investing in. Investor demand for green bonds has remained strong ever since the market really started to develop in 2014, after some successful earlier issuances by the European Investment Bank (in 2007!) and the International Finance Corporation (IFC), for example.

In the current Sustainable Finance context, growth in the market for green bonds is widely viewed as being a potential source of significant investment, which would support the EU in meeting its European Green Deal targets and, as suggested elsewhere in this Report, this aspect of a banks' activities is also subject to scrutiny with a view to further stimulating the market. Again, this attention and the ensuing measures and initiatives will challenge banks' existing funding strategies, as well as providing opportunities.

In this section, we:
- Outline the current state of play of the EU green bond and green covered bond market
- Describe the main drivers of and therefore opportunities to be had from further development of the market in green covered bonds, as well as the key challenges associated with further green covered bond issuance.
- Highlight the solutions offered by the EEMI to further unlock the potential of the green covered bond market.

Although beyond the immediate scope of the EEMI, we also consider the implications of the proposed EU Green Bond Standard for green covered bond issuances moving forward, as a result of the relevance of this for the broader energy efficient mortgage value chain. We conclude with a case study focussed on Caja Rural de Navarra's inaugural Taxonomy-aligned green covered bond issuance which provides insights into what taxonomy-alignment in this respect actually means.

5.1.1 The challenges/opportunities

Box 8 The challenges/opportunities of funding activities

Challenges/opportunities

- Growth in the market for green bonds is widely viewed as a source of significant green investment and the European Commission is focussing efforts on stimulating the market via the future EU Green Bond Standard, for example.
- These legislative efforts are inevitably putting the spotlight and therefore pressure on banks with respect to their green bond issuances. At the same time, there are also opportunities to be had for banks in stepping up their green bond issuances, for example, related to the potential for a 'greenium' and a diversified investor base.
- However, it is widely held that a lack of appropriate assets in line with covered bond programmes and sustainability frameworks is currently limiting further growth in the market, a situation which is exacerbated by regulatory developments, most notably the EU Taxonomy.
- Additional ongoing challenges relate to a lack of data availability, standardisation and disclosure.

Solutions

- EEMI efforts to build, test and deploy an integrated EEM ecosystem will progressively help to respond to the challenge of insufficient assets by stimulating the EEM market linked to the purchase of energy efficient properties or to the energy efficient renovation of existing buildings.
- EEM Label and Covered Bond Label are laying down standardised definitions and improving the collection, processing and disclosure of standardised data in a harmonised manner.

As the European Commission reports, since 2015, the issuance of green bonds has expanded significantly, with a five-fold increase during the period. The EU is a global leader in this market, with 51% of global issuance in 2020 from EU companies and EU public bodies[71].

Particularly relevant to the current Project is the market in sustainable covered bonds, given the intrinsic link between covered bonds and mortgages. Here too we see significant growth. The first sustainable covered bond was issued in 2014 by Münchener Hypothekenbank. This was followed in 2015 by an inaugural green euro benchmark covered bond in 2015 from Berlin Hyp. As reported by Schuller, Costa & Beaumont in the 2021 ECBC Fact Book[72], since then, the market in sustainable covered bonds has continued to expand, with issuance gaining momentum in particular since 2018, when more than 6bn EUR of sustainable covered bonds were issued. The authors estimate that more than 70% of sustainable covered bonds are green covered bonds, with the proceeds being used to (re)finance green projects, which in the case of covered bonds are most often linked to energy efficient buildings. Linked to this, almost 90% of sustainable covered bonds are backed by mortgages.

[71] https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3406
[72] https://hypo.org/ecbc/publications/fact-book/

Despite these encouraging figures and the strength of investor demand, current green bond issuance in the EU is still relatively niche, representing 2.6% of total EU bond issuance, according to the European Commission[73]. Schuller, Costa & Beaumont (2021) note that, according to the June 2021 composition of the iBoxx EUR benchmark covered bond index, sustainable covered bonds in the index amounted to EUR 25bn, representing 3.3% of the total euro benchmark covered bonds in the index. Of these, EUR 18bn or 2.4% were green covered bonds, although issuance volumes are growing all the time.

In recent months and as part of its Sustainable Finance agenda, the European Commission has turned its attention to stimulating the market and providing a regulated environment for green bonds through the draft regulation for an EU Green Bond Standard (hereafter EUGBS Proposal)[74], which is intended to boost issuance and help companies and public authorities to use green bonds to raise funds on European capital markets. This is in turn intended to boost the Capital Markets Union and the EU's financial markets as a hub for sustainable finance.

Beyond the increasing pressure from the Sustainable Finance agenda, there are other factors which can represent incentives or opportunities for banks to issue green covered bonds. One of these is that these bonds can be priced with a 'greenium', which largely reflects the broader investor base (more on this below). Schuller, Costa & Beaumont (2021) compared the trading levels of green covered bonds versus non-green covered bonds from the same issuer with similar durations and found that in most cases green covered bonds do indeed trade at slightly tighter levels than the non-green alternatives. The authors do however note that the relatively small difference at the current time could be explained by the fact that "*covered bonds are already trading at relatively tight levels, providing limited room for sustainable covered bonds to trade much tighter than non-sustainable peers*".[75] (P. 75)

In their article for the ECBC Fact Book entitled "*Green Covered Bonds – An Important Contribution to Climate Neutrality*", Rudolf, Schadow and Schuller (2021)[76] have suggested that the narrow spread levels on the secondary covered bond markets could mean issuers favour green senior issues, although they are more optimistic in the medium to longer term for green covered bond issuances as a result of the huge volumes of mortgages portfolios refinanced via covered bonds.

Another incentive for the issuance of green covered bonds, which has already been alluded to, is the broader investor base. In previous research conducted under the EEMI[77], a number of financial institutions interviewed indicated that green funding instruments are attracting many new investors to the table in terms of volume, numbers and geography, as well as an increasingly diversified set of

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73 https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_3406
74 https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32019R2088
75 https://hypo.org/ecbc/publications/fact-book/.
76 https://hypo.org/ecbc/publications/fact-book/
77 Bertalot, L., Johnson, J. & Andersen, ML. (2017), Creating An Energy Efficient Mortgage For Europe: A review of the state of play on 'green' finance.

investors, beyond the 'traditional' base. This has resulted in deals consistently being several times oversubscribed.

Finally, a further incentive could come, at some point in the future, from potential differentiation in the ECB's collateral framework, further to a commitment from the ECB's Governing Council in July 2021 to include climate change considerations in its monetary policy framework. As ING reports in its Analysis "*ECB – Smoking out fossil fuels*"[78], these plans "*may encompass the first steps towards a more favourable haircut treatment and a stronger asset purchase focus for assets that, based on the sustainability key performance indicators (KPIs), are considered to have lower climate risks*" (p.5). One caveat worth highlighting here is that, for the time being at least, the greening of the asset purchase programmes is primarily focused on corporate bonds, and as ING notes (p.5), the ECB would have to "*expand its horizon beyond corporate exposures alone and at least consider covered and preferred senior bank bond exposures too*".

Given the growing interest in green/sustainable bonds, Schuller, Costa & Beaumont (2021) interviewed investors on their positioning in relation to ESG topics. According to their results, a majority of investors take into account ESG metrics in their investment decisions, 13% saying these are critical. Rudolf, Schadow and Schuller (2021) also point to the attention being paid to ESG metrics and in particular suggest that "*fixed income investors will likely favour those instruments that meet all the criteria of the future EU green bond standard, as these bonds are considered to be 100% taxonomy aligned.*"[79] (p.93) The authors do however note that green bonds that are not fully EU Taxonomy compliant will continue to garner investor interest as they will still count towards the EU Taxonomy KPIs for the part that they do finance EU Taxonomy compliant activities. Nevertheless, there is an expectation that the EU Green Bond Standard is likely to become the measure of choice for issuers to evidence the EU Taxonomy alignment of their green bonds. Significantly, the authors point to industry initiatives, such as the EMF-ECBC's Energy Efficient Mortgages Initiative (EEMI) and the VDP's minimum standards for Green Pfandbriefe, as important tools for both issuers and investors in their green bond structuring and investment processes.

While sustainable covered bond issuance is expected to continue to grow into the future, in 2022 growth is anticipated by many to be more moderate after a doubling of such issuance in 2021. This is largely attributed by a number of bank analysts and rating agencies[80] to a lack of appropriate assets in line with covered bond programmes and sustainability frameworks exacerbated by regulatory developments, notably the EU Taxonomy, which is seen as limiting eligible assets further. These voices also point to ongoing challenges related to a lack of data availability, standardisation and disclosure.

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78 https://think.ing.com/articles/ecb-smoking-out-fossil-fuels/#a10
79 https://hypo.org/ecbc/publications/fact-book/
80 https://sustainabonds.com/gss-covered-growth-seen-easing-as-asset-constraints-bite/

5.1.2 The Solutions

Whatever the final issuance figures for 2022 will be, the EEMI, the EEM Label and the Covered Bond Label offer concrete solutions to many of these challenges, as suggested by Rudolf, Schadow and Schuller (2021) and mentioned above. Indeed, the potential for sustainable and in particular green covered bonds to drive the renovation wave has been long recognised in the context of the EEMI and, alongside more recent efforts of the EU authorities to boost green (covered) bond issuance, one of the main objectives of the EEMI has been to design a robust energy efficient mortgage value chain which drives a virtuous circle for all market participants. A key aspect of this value chain directly associated with the origination of energy efficient mortgages is the funding mechanisms behind the mortgage portfolios and the investors who invest in the debt securities e.g. covered bonds and securitisation. In other words, the EEMI is also focussed on delivering the tools and infrastructure to support the issuance of green (covered) bonds on the liability side against dedicated green mortgage loan products on the asset side based on minimum criteria, as part of banks sustainability efforts. And the exponential increase in issuance and the sustained strong investor demand described above point to the opportunities to further develop the market by doing so.

On the asset side, as outlined in detail under the retail activities section of this Report, the EEMI has delivered a comprehensive toolbox to support banks in originating energy efficient mortgages and efforts are ongoing to build, test and deploy an integrated energy efficient mortgage ecosystem, leveraging on digital solutions, to accelerate and sustain market development. This will progressively help to respond to the challenge of insufficient assets by actively encouraging the purchase of energy efficient properties or promoting energy efficient renovation of existing buildings, by way of energy efficient mortgages.

At the same time, significant efforts have been and are being undertaken to improve the collection, processing and disclosure of standardised data on both the asset and liabilities side of the business in a harmonised manner and based on common definitions:

The EEM Label, as outlined earlier, consists of a definition of an EEM, which underpins the EEM Label Convention, and a Harmonised Disclosure Template for the disclosure of the credentials of banks' energy efficient mortgage loans, which is intended to provide transparency to investors, credit rating agencies and regulatory authorities. The EEMI Master Template also offers important benefits for issuers of EEM covered bonds or securitisation programmes in that it provides relevant loan level information to produce impact reporting and allocation reporting for investors. The data fields, level of aggregation and any other information to be disclosed are completely the prerogative of the bank and can be decided at institution or group level.

On the liabilities side, already back in 2018, efforts were undertaken in the context of the Covered Bond Label to make green covered bonds and their underlying assets more visible and facilitate investor due diligence through a dedicated definition of a sustainable covered bond (see box 9) and the possibility of tagging eligible issuances with a 'green leaf' icon.

Box 9 Covered Bond Label Definition of a Sustainable Covered Bond

Covered Bond Label Definition of a Sustainable Covered Bond

A Covered Bond Labelled sustainable covered bond is a covered bond that is fully compliant with the Covered Bond Label Convention, and also includes a formal commitment by the issuer to use an amount equivalent to the proceeds of that same covered bond to (re)finance loans in clearly defined environmental (green), social or a combination of environmental and social (sustainable) criteria. Covered Bond Labelled sustainable covered bond programs are based on their issuer's sustainable bond framework which has been verified by an independent external assessment. The issuer strives, on a best efforts basis, to replace eligible assets that have matured or are redeemed before the maturity of the bond by other eligible assets."

Source: Covered Bond Label website (link)

Taken together, the efforts of the EEMI, the EEM Label, the Covered Bond Label and the ensuing growing realisation of banks of the value in originating dedicated green loan products to support green covered bond issuances will almost certainly grow the asset base to support further issuance moving forward.

5.1.3 Taxonomy & Future EU Green Bond Standard

In addition to the issues considered above, there are a number of other relevant key questions which go beyond the immediate remit of the EEMI's work to date, but which are nevertheless crucial for the broader EEM value chain and will be determinant for market development. These relate in particular to the impact of the EU Taxonomy and the future EUGBS on green covered bond issuances, against a background of existing green covered bond issuances which are typically structured around the ICMA Green Bond Principles (GBP)[81].

In this section of the Report, we therefore consider the following questions:

- What will an EU Taxonomy aligned green bond, or EU Green Bond, look like?
- What impact will these initiatives have on the key components of green covered bond programmes, as recommended by the ICMA Green Bond Principles (GBP) which are commonly used by issuers, linked to transparency, disclosure and reporting, namely: (1) use of proceeds, (2) process for project evaluation & selection, (3) management of proceeds, (4) reporting, as well as Green Bond Frameworks and external assessment?

[81] https://www.icmagroup.org/assets/documents/Sustainable-finance/2021-updates/Green-Bond-Principles-June-2021-140621.pdf

- And finally, what can issuers do to ensure alignment?

Indeed, at the time of writing and over the course of recent years as the market in green covered bonds has grown, issuers of these bonds have developed their own approaches to sustainable bond frameworks around the ICMA GBP, which may require review and adjustment as a result of the new regulatory requirements, in particular the EU Taxonomy and the future EUGBS. According to M. Schuller in her ING Analysis from 2021 entitled "*Green bank bonds: How the EU green bond standard will shape future issuance*"[82], banks are already increasingly seeking to align their green asset portfolios towards the TSC for buildings of the EU Taxonomy, with a focus on evidencing that buildings financed by these loans are in the "15% best in class" in terms of energy performance, however, as we will see, full compliance potentially goes far beyond this alignment and, as suggested above, raises questions as to how issuers can bring their frameworks in line.

Use of proceeds

The focus on the use of proceeds for 'green' projects of green bonds to raise funds provides transparency for investors on the green credentials of the projects that are being financed or refinanced, as well as information on the management of proceeds, impact reporting and external reviews. According to Rudolf, Schadow & Schuller (2021), with two exceptions (one issuer refinances public assets with a green covered bond and another has refinanced renewable energy loans with a sub-benchmark size green covered bond), green covered bonds raise funds that are used to refinance both residential real estate and commercial real estate that comply with certain sustainability criteria.

As a result of this innovation brought by green bonds, use of proceeds is inevitably a core component of the ICMA Green Bond Principles. It is also at the heart of other industry standards, including the definition of a sustainable covered bond on the Covered Bond Label website as indicated above and the VDP's minimum standards for Green Pfandbriefe[83].

The EUGBS Proposal builds on these industry standards to the largest extent, as we will see later also, but in comparison to the ICMA Green Bond Principles, the EU Green Bond Standard Proposal goes further when it comes to allocation of eligible proceeds: it requires that 100% of the proceeds of green bond issuances be used to finance or refinance assets related to economic activities that are fully EU Taxonomy compliant. Alignment with the EU Taxonomy is intended by the European Commission to provide clarity on project eligibility in this respect and ensure consistency between the project financed and the EU's long-term environmental objectives (more on this below). Banks issuing EU Green Bonds will therefore have to fully comply with the EU Taxonomy's technical screening criteria (TSC) and Do No Significant Harm (DNSH) criteria. Given the almost exclusive focus of green covered bonds on refinancing residential and commercial real estate, the TSC for

[82] https://think.ing.com/uploads/reports/Green_bond_standard_final_revised.pdf
[83] https://www.pfandbrief.de/site/en/vdp/sustainable_finance0/sustainable_pfandbrief/green-pfandbrief.html

buildings will be the most relevant in this context (more on this in the next section regarding selection of projects) and as we have seen above, banks are already increasingly seeking to align their green asset portfolios accordingly.

However, there are Industry concerns about this 100% EU Taxonomy compliance requirement[84]. Indeed, this will require large volumes of such mortgage loans which would take years to accumulate to meet minimum issue size. Without appropriate flexibility, it would take years before banks – and especially small banks - could issue an EU Green Bond, with knock-on effects for financing to borrowers and for the climate goals. The Industry has therefore proposed a threshold of 80% for a transition period of at least 5 years, and the possibility to extend to categories of assets which are not included in the current Taxonomy, considering that the latter must be updated in a timely manner. At the time of writing, the EUGBS Proposal is still under discussion by the European Parliament and Council, so a final decision on this aspect is outstanding.

Schuller (2021) considers another relevant question in her analysis mentioned above which is worth highlighting here, namely can a green covered bond be considered as EU Taxonomy compliant if part of the taxonomy eligible assets financed are not part of the cover pool? Using the example of NORD/LB which recently shared the indicative taxonomy alignment of its green asset portfolio in its green bond report of July 2021, in its analysis ING suggests that the answer is yes: *"The EuGBS proposals are not explicit on such a green asset coverage requirement on a cover pool level for covered bonds. Besides, while in minority, there are several examples of sustainable covered bonds that in fact already partially finance sustainable assets that are not part of the cover pool."*[85] (p.6)

Process for Project Evaluation & Selection

A further key component of the ICMA GBP is clear communication from the issuer to investors on how it identifies and selects suitable projects. Against a background where the provisions of the EU Taxonomy must be applied to define project eligibility according to the EUGBS Proposal and, as we have seen, are already increasingly being applied to banks' green assets portfolios, one of the key questions is how to define projects in relation to the Taxonomy which is designed to identify environmentally sustainable economic activities using NACE codes?

In its Usability Guide for an EU Green Bond Standard[86], the Technical Expert Group (TEG) provides some useful indications which go some way to responding to this question. The TEG starts by clarifying that *"green Projects can include green assets and green expenditures that contribute to improving and maintaining the value of such green assets"* (p.15). The TEG furthermore clarifies its view that EU Green

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84 https://hypo.org/app/uploads/sites/3/2021/09/EMF-ECBC-Comments-on-the-Proposal-for-a-Regulation-on-EUGBS-14.09.21.pdf

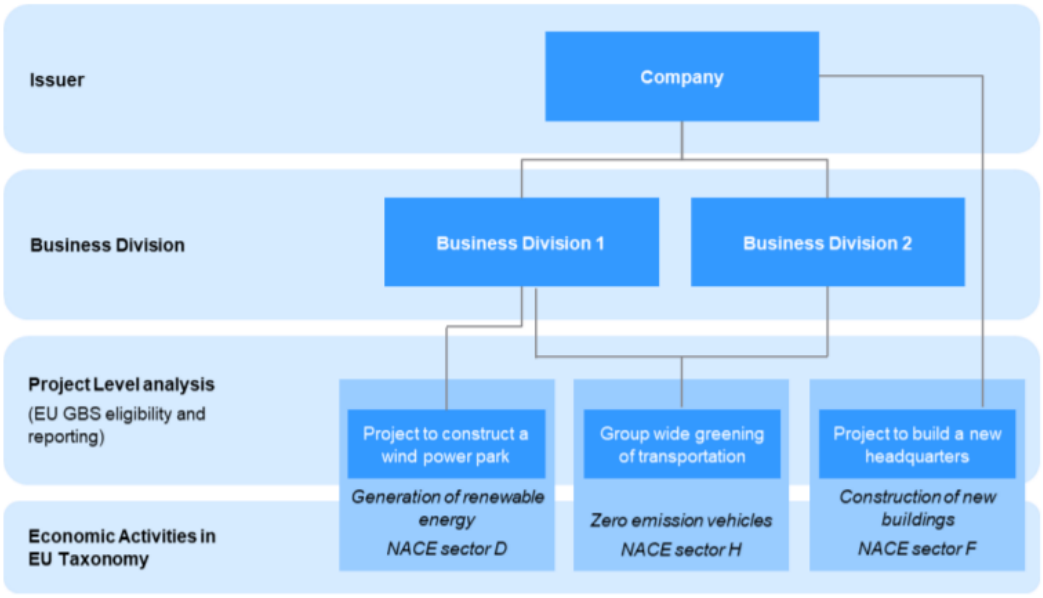
85 https://think.ing.com/uploads/reports/Green_bond_standard_final_revised.pdf

86 https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-green-bond-standard-usability-guide_en.pdf

Bonds should be able to be used to refinance assets that may have a longer operating lifetime than bonds' tenors.

The TEG also provides guidance on ensuring correspondence between activities and projects in applying the EU Taxonomy as follows (p.16): *"For a green bond, issuers may identify potential green projects in various parts of the business. When assessing the eligibility of the green projects, the issuer needs to check the TSC relevant to the specific activity and related NACE code, while also taking into account the general EU Taxonomy Regulation requirements (exclusions and safeguards)."*[87] Recognising the fact that NACE codes[88] are not widely used in the financial sector, the TEG provides a high-level illustration (below) of how a company may relate its business operations to eligible green projects and the relevant codes referenced in the EU Taxonomy. A further table contained in Annex 4 of the TEG's EU GBS Guide aims to give further practical and more detailed examples of how to map projects to relevant NACE codes.

Figure 10
TEG Illustration of Relating a company's business operations to Green Projects and NACE codes



Source: TEG Usability Guide for an EU Green Bond Standard (link)

Schuller (2021) reports that at the current time, communication by issuers around the EU Taxonomy alignment of their green bond frameworks appears to focus mainly on their compliance with the TSC. However, eligibility of projects depends also on their alignment with DNSH requirements and the minimum safeguards laid

[87] https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-green-bond-standard-usability-guide_en.pdf

[88] Nomenclature des Activités Économiques dans la Communauté Européenne (NACE), see: https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Glossary:Statistical_classification_of_economic_activities_in_the_European_Community_(NACE)/fr

down in the EU Taxonomy Regulation, and issuers will have to find a way to assess these requirements at project level and evidence compliance. The TEG provides useful indications in this respect, whilst also recommending external verification of the alignment of the green bond framework and Projects with the EU Taxonomy.

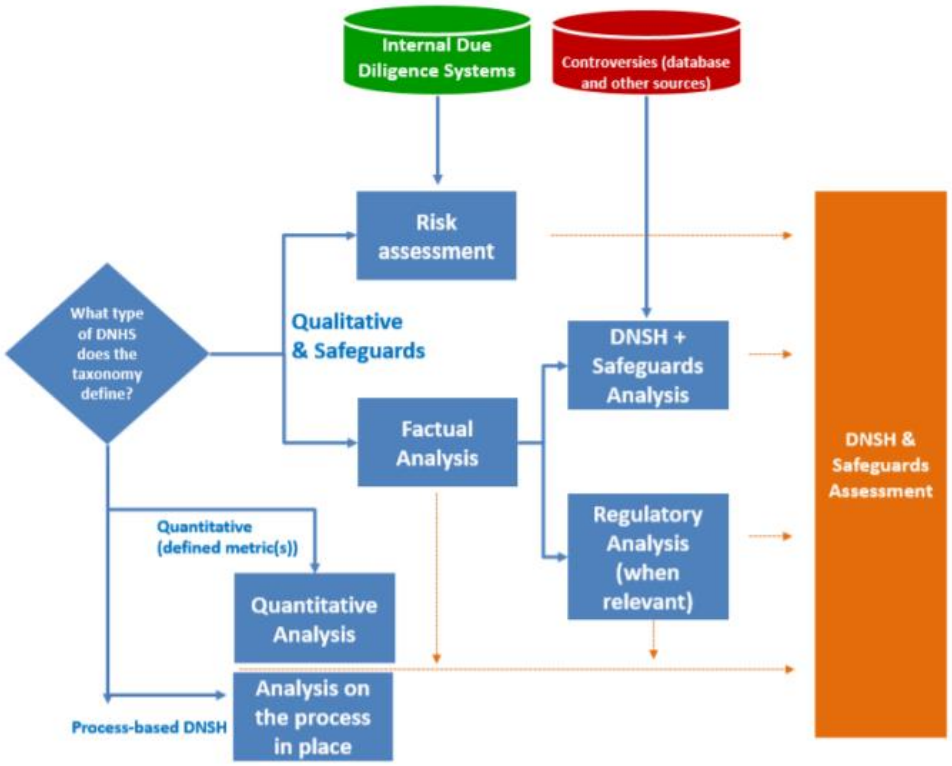
The TEG notes that the DNSH criteria in relation to climate change mitigation are a combination of quantitative and process-based, qualitative criteria, while the DNSH criteria in relation to climate change adaptation are principles-based. Article 18 of the Taxonomy Regulation[89] specifies that minimum safeguards are procedures to be implemented by institutions carrying out the activity to ensure alignment with the OECD Guidelines for Multinational Enterprises, the UN Guiding Principles on Business and Human Rights and International Labour Organisation's declaration on Fundamental Rights and Principles at Work and the International Bill of Human Rights.

Against this background, the TEG recommends that issuers and verifiers take "*a procedural approach to DNSH and minimum safeguards assessment and verification for EU GBS*" [90] (p.18) and suggests that this may be sufficient to meet investor expectations regarding compliance. The TEG provides the following illustration of a procedural approach to this assessment and verification:

[89] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R0852&from=EN

[90] https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-green-bond-standard-usability-guide_en.pdf

Figure 11
TEG Illustration of a procedural approach to DNSH & Minimum Safeguards



Source: TEG Usability Guide for an EU Green Bond Standard (link)

Management of proceeds

The EUGBS Proposal aligns to the largest extent with the ICMA Green Bond Principles, requiring that allocations to green projects be for an amount equivalent to the net proceeds of the green bond and that such allocations be documented. In its Guidance, the TEG notes that the approach to the management of proceeds should fulfil the reporting and verification requirements set out elsewhere in the EUGBS Proposal (see more on this below).

Reporting

The EUGBS Proposal largely follows market best practice with regard to reporting, laying down allocation reporting and impact reporting requirements. As Schuller (2021) notes, however, it goes further in certain key areas. One of the key differences with these requirements and existing green bond frameworks is of course the focus on taxonomy compliance. Issuers will have to provide much more detail than is currently the case, for example with regard to the allocation of proceeds for which issuers have to describe (a) the process by which they determine that

projects meet the taxonomy requirements and (b) which technical screening criteria have been considered.

Furthermore, there are additional requirements around the publication of annual allocation reports until the green bond proceeds have been fully allocated and a post-issuance allocation report subject to a post-issuance review, once allocation has been completed. Schuller (2021) notes that while some issuers do this, not all do and not an annual basis. The author does however point to this likely leading to a more uniform approach by issuers to verification and greater assurances to investors around Taxonomy-aligned allocation of proceeds throughout the life of the bond.

Finally, the EUGBS Proposal requires issuers to disclose the environmental impact of their bonds through the publication of impact reports at least once during the lifetime of the bonds. In a further departure from current practice, the EUGBS Proposal requires the publication of information not only on the positive impacts of the bond proceeds, but also the adverse impacts, as well as the metrics, methodologies and assumptions used to assess the impacts. Schuller (2021) notes that the latter is already market best practice but not all issuers make this information available.

In addition to what are widely considered to be the four key components of a green bond programme, the ICMA Green Bond Principles point to two further elements intended to deliver even greater transparency, namely green bond frameworks and external review:

On external review, for example, the EUGBS Proposal requires the pre-issuance review of the so-called European Green Bond 'Factsheet' which will be necessary in order of bonds to be offered to the public, which marks a departure from the currently voluntary nature of second party opinions which are often sought in relation to green bond frameworks. Again, Schuller (2021) suggests that this will offer additional Taxonomy alignment comfort to investors, as for the post-issuance review requirement mentioned above.

A further significant change brought by the EUGBS Proposal in this area are efforts to improve the standardisation, transparency and supervision of external reviewers by way of an 'accreditation' system, according to which they will need to be registered with and supervised by ESMA. Furthermore, issuers of European green bonds will only be able to use external reviewers that have been registered and are subject to ongoing supervision by the ESMA.

5.1.4 Case Study: Caja Rural de Navarra's Inaugural Green Covered Bond

With its February 2022 inaugural green covered bond issuance, Caja Rural de Navarra (CRN) is providing indications as to what an EU Taxonomy aligned covered bond can look like.

As outlined in its Investor Presentation[91], CRN's green covered bond has been issued against its recently updated Sustainability Bond Framework which aligns the use of proceeds with the EU Taxonomy TSC and the draft of the EUGBS. The framework is furthermore aligned with the ICMA Green Bond Principles, Social Bond Principles and Sustainability Bond Guidelines (2021 versions) and has been reviewed by Sustainalytics which confirms in its Second Party Opinion (SPO) that the framework is aligned with the ICMA Principles and EU Taxonomy.

As indicated in the investor presentation, the proceeds of the bond will be dedicated to (re)finance the construction, renovation, acquisition and ownership of Energy Efficient buildings, intended to be aligned with the Taxonomy's TSC for the construction of new buildings, the renovation of existing buildings and the acquisition and ownership of buildings. CRN also commits to making best efforts to comply with the DNSH criteria.

[91] https://www.cajaruraldenavarra.com/sites/default/files/crn-inaugural7-y-green-covered-bond-4feb2022.pdf

CHAPTER 6
CONCLUSION

At a time when the climate transition is at the top of political agendas in Europe and beyond, the role of the private finance sector in directing investment to sustainable activities is no longer an issue for debate. Rather it is the subject of immense market-led efforts to deploy the needed financing to support the transition to a climate neutral-economy and vast, interconnected regulatory and supervisory actions to mobilise private financing for sustainable growth, whilst seeking to ensure the resilience of the financial system to climate change risks.

As a result of the intrinsic link between mortgages and buildings, which for their part, account for 36% of the EU's energy consumption and 40% of CO_2 production, and the subsequent proximity of the mortgage industry to the EU's households, the mortgage industry has huge transformative potential in relation to the renovation of the EU's building stock and consequently in achieving the EU's climate and sustainability objectives. It was this realisation in 2015 that led to the launch of the Energy Efficient Mortgages Initiative which has been preparing the mortgage industry ever since for the game-changing role it will play in helping finance the transition and the inevitable policy changes that were coming.

As this Report has shown, the result has been a multitude of market-led actions under the EEMI which can offer a fast track to respond to the challenges and maximise the opportunities of the regulatory and supervisory landscape, and provide lending institutions with the tools to increase the resilience of their loan books to climate change risks, through efforts to:

- put transparency at the heart of energy efficient mortgage financing efforts by creating a mechanism, **the EEM Label**, based on data and data disclosure which provides key insights into the green credentials of existing loan books and facilitates disclosure of these, reduces the risk of greenwashing and secures confidence and trust from market participants;
- deliver the know-how to deploy integrated **energy efficient mortgage market 'ecosystems'** across the EU, with consumers and their needs at the centre of these efforts, stimulating the supply and take-up of energy efficient mortgages in support of the Renovation Wave;
- reinforce and increase the efficiency of the broader **origination and funding value chain**, by delivering energy efficient mortgage assets to support the issuance of green covered bonds, responding to strong and sustained investor demand and maximising the potential of green bonds to act as a significant source of green investment.

But the efforts do not stop here. Digital innovation is increasingly offering ways to support the delivery of key elements of the 'ecosystems' mentioned earlier, including energy simulators for consumers, property and data solutions for financial institutions and integrated renovation services platforms including SMEs. At the time of writing, the EEMI is in dialogue with relevant organisations with a view to

understanding how these can be deployed in the 'ecosystems'. In parallel and on the subject of SMEs, efforts are underway through a related Horizon 2020 funded Project, TranspArEEns, to mainstream a quali-quantitative framework for standardised collection and analysis of SME' EE and ESG information and develop a standardised EE-ESG rating, both intended to facilitate SME access to EE finance and investment. In this way, this Project too makes a fundamental contribution to the broader efforts of the EEMI to build integrated energy efficient mortgage market 'ecosystems', in which SMEs have the necessary resources to play a crucial role.

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