

KICK-STARTING MORTGAGE FINANCING OF ENERGY SAVINGS RENOVATIONS:

Digitalisation as a key driver

EeMAP

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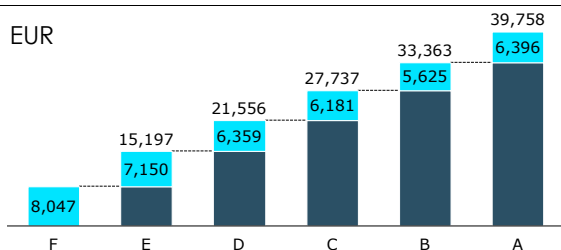
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Energy efficient houses have a price premium

There is ample evidence that reducing energy use in the existing building stock has large environmental and economic benefits.

Cross-country evidence suggests that the market value of buildings increase following an energy renovation, providing collateral value for financing the up-front cost of the renovation. Lower energy costs make the building more attractive for buyers: the expected yearly savings are converted into a higher bid price for the house. This is supported by studies covering UK, Ireland and the Netherlands. Also, a Danish study by Copenhagen Economics finds a significant impact in the housing value using a detailed economic approach, *cf. figure 1*.

Figure 1 Gain in housing price of green renovations



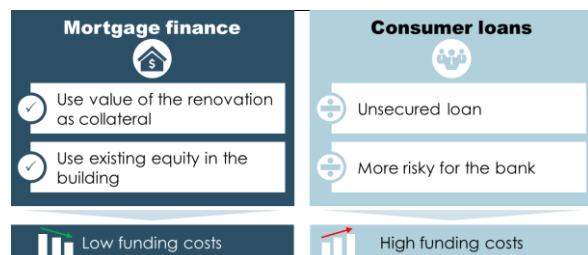
Source: Copenhagen Economics (2015): Do homes with better energy efficiency ratings have higher house prices?

Hard facts. Clear stories.

Mortgage finance as a key role and likely to grow fast

We argue that mortgage-based financing of energy renovation should have a large role in renovating the existing building stock (as well as new investments), *cf. figure 2*; Funding costs are lower and risk of a bank calling back credit is zero or very low.

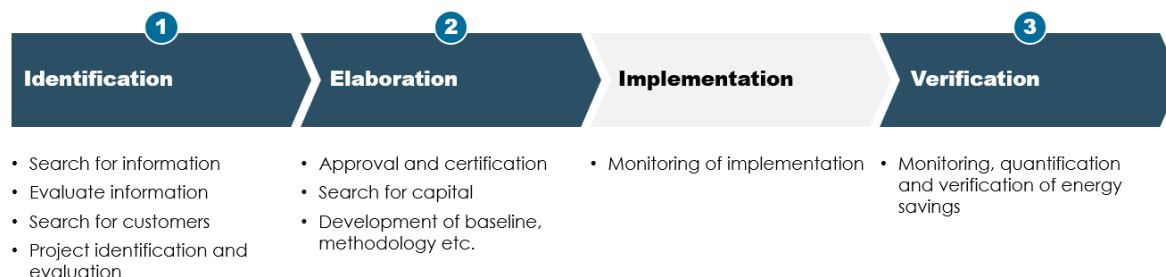
Figure 2 Mortgage is the obvious choice of finance for green renovations



In establishing market-led solution, digitalisation will be a key driver

Digital-based business models will reduce costs both of identifying the best options for energy savings as well as provide proof of results for the owners. That could boost both demand for energy savings and the ability to make distinctions between buildings with high and lower energy costs. The latter will be very helpful both for owners as well as investors in bonds with collateral, *cf. figure 3*.

Figure 3 Transaction costs in energy efficiency projects can be reduced significantly by digitalisation



Source: Copenhagen Economics (2018), *Benefits of using data for screening for energy efficiency potential in buildings*

In the rest of this note, we will first describe three barriers to a market-led solution, and then provide our recommendations on how to overcome these barriers.

BARRIERS TO A MARKET-LED MORTGAGE FINANCE SOLUTION

There are certain, often country specific, barriers that prevent a market-led solution, which broadly can be divided into three categories:

1: Energy efficiency assessment

The fact that there is a link between energy efficiency improvements and disposable income as well as the direct value of buildings is well established. However, two key elements are left to be answered:

- While some countries have procured studies to investigate the magnitude of energy efficiency improvements impact on housing prices, there is a lack of a harmonised method to estimate it across EU countries. In order to make it possible and accessible for banks to estimate the increase in collateral from energy efficiency improvements, a credible and harmonised method across EU countries could be useful.
- In many countries, market actors lack easy access to quality data on energy consumption and building performance. It is necessary for banks and other market actors to have easy access to information on the buildings' energy performance in order to minimize transaction costs involved with granting a green mortgage as well as monitor performance.

2: Funding structure

The structures for financing real estate purchases and construction are very different across EU countries. The use of specific financing instruments such as covered bonds is very much concentrated in Northern Europe (NL, DK, SWE, FRA and GER). Furthermore, the degree to which an increase in the market value of a house can

be used as collateral for a new house is also substantially different.

For some countries the value at the time of the first "origination" of the loan is binding, while other countries such as Sweden allow developments in house price markets to impact on the estimated collateral value.

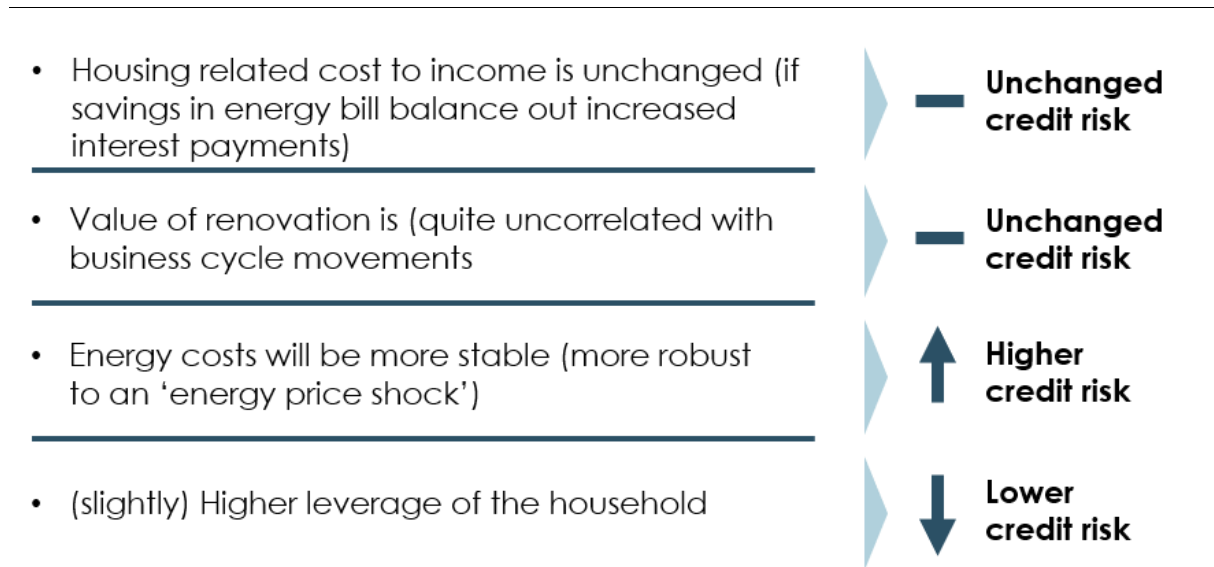
This is partly driven by substantial differences in the regulatory models, but also differences in business practices.

3: Credit risk assessment at banks

The credit risk models of many banks lack a methodology that fairly assess green mortgages in at least two ways (see also *figure 7*):

- Most crucially, many banks do not include the increase in collateral due to an increase in value of the house. This means that loans to green renovations de facto are treated as unsecured loans, giving rise to higher capital costs for banks and higher lending rates for consumers. This issue is primarily a matter of recognising the increase in value of the building, rather than a technical issue of the risk models.
- In addition, banks do often not include an increase in the disposable income net of energy consumption, which in turn should decrease the debt-to-income. To account for this, a new measure of "income net of energy consumption" is needed.

Figure 4 Impact on the credit risk of a mortgage-financed green renovation



OVERCOMING THE BARRIERS: A PRAGMATIC COUNTRY-BY-COUNTRY APPROACH

As described, the potential to establish mortgages as a source of finance for green renovations differs widely between different countries. Consequently, to kick-start green mortgage finance, we suggest to adopt a pragmatic country-by-country approach, to overcome the different country-specific barriers described above. This could be an important first step in order to achieve the long-term goal of a pan-European private bank financing mechanism.

EeMAP has paved the way for initiating green mortgages on the European banking market.¹ Building on their efforts, we below go through each of the three described barriers and outline how we see that they could be overcome:

1: Energy efficiency assessment

In order to make it more attractive for banks to include energy efficiency improvements as collateral, it is necessary to create a plug and play framework able to assess impacts of energy renovations on housing prices in the countries in which the operate. The framework has to consider the country-specific differences in housing markets and Energy Performance Certificate (EPC) schemes across the EU.

Along with this, providing better access to data on buildings and energy consumption will make it easier for banks to assess the impact of each investment. A first step towards this is a mapping of the different EPC schemes and data access across the EU.

In doing so, digitalisation will be a key driver:

In addition to reducing costs of identifying the best options for energy savings as well as provide proof of results for the owners, digitalised solutions can replace the current energy labelling system with more up-to-date information on the actual costs of living in houses with different energy performance. Indeed, energy labelling of any given house may be outdated while also failing to recognise that energy costs do not only reflect the physical structure of the house (e.g. windows, roof), but also the source of the heating.

Thus, digitalisation could provide up-to date information on a given building's energy performance adjusted for the most relevant drivers of energy use such as size of family, source of energy, location (e.g. close to sea) etc.

2: Funding structure

As the markets for housing finance differ significantly between different countries, we find it important to conduct a country-by-country analysis of how a viable scheme for green renovations can be implemented:

¹ See e.g. EeMAP (2017): Emerging analysis

It is key that borrowers can use the value of the house as collateral, i.e. avoid that lending for renovations is treated as an unsecured loan:

- In countries where it is already possible to issue mortgage backed securities to fund renovations, the main impetus should be on using new instruments to provide sharper estimations as to how energy renovation affects house prices.
- In contrast, if the covered bond is split into different series, it could result in less liquid products, and customers would have to pay a liquidity-premium.
- In other countries, there are currently no such funding structure in place. Here, it will be key to analyse how renovations can be funded through the current financial infrastructure while still using value of the house as collateral. If national legislation and regulatory guidelines are currently blocking such an approach, we need to see how this can be amended with a minimum of change and on the lowest level possible. This is supported by the new Basel agreement that explicitly states that the increase in housing value due to renovations should be able to be used as collateral.²

The EU Commission Action plan for sustainable finance suggests looking into a more wide-ranging option namely to apply lower risk weights to green assets.³ We would urge considerable caution here.⁴

3: Credit risk assessment at banks

Credit risk models at banks are highly complex and expensive to develop. The important thing is to *not* give a theoretical perfect treatment of green renovations, but to allow for the majority of the interest mitigating effect to take place. Thus, the focus should be on providing plug and play guidelines that – country by country – suggest a minimum of amendments to the current risk models:

- As on the funding side, the key will be how the increase in the collateral can be recognised in the risk models. Estimations by Copenhagen Economics show that more than 2/3 of the reduction in the interest stems from recognising the increase in the value of the house, when conducting green renovations.
- In addition, outline how the increase in the disposable income net of energy consumption can reduce capital

costs (note however, that this is more complex and will have smaller mitigating effect on the interest rate).

- Finally, the fact that consumers with green renovations are more robust to energy price shocks with green renovations, will only have indirect mitigating effects on the capital costs of banks. Our assessment is that this effect will be highly complex to implement and should not be in focus to begin with.

² Bank for international settlements (2017): Basel III: Finalising post-crisis reforms

³ High-Level Expert Group on Sustainable Finance (2018): Financing a sustainable European economy

⁴ It is not a priori given that a house with a higher rating for e.g. energy efficiency is safer from a prudential perspective; the key point is how much free "equity" there is in the house and how

risky that is to changes in market circumstances. In terms of changes in prudential regulation we think the important point to achieve is acceptance that a house with a certified lower energy bill gets a higher price in the market and gives a lower costs to the consumer. That should be reflected in loan-to-value and loan-to-income rules as discussed elsewhere in the note.

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Copenhagen Economics is one of the leading economics firms in Europe. Founded in 2000, we currently employ more than 85 staff operating from our offices in Copenhagen, Stockholm, Helsinki and Brussels. The Global Competition Review (GCR) lists Copenhagen Economics among the Top-20 economic consultancies in the world, and has done so since 2006.

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