CREATING AN ENERGY EFFICIENT MORTGAGE FOR EUROPE

BUILDING ASSESSMENT BRIEFING: FINLAND
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INTRODUCTION

This document provides the financial sector with an overview of the Finnish market and the state of play in building performance assessment in Finland relevant to green mortgages, and highlights the opportunities and barriers regarding the on-going Energy efficient Mortgages Action Plan (EeMAP) project’s ambitions to create a standardised European energy efficient mortgage.

At the heart of the EeMAP initiative is the assumption that energy efficiency has a risk mitigation effect for banks because of its impact on a borrower’s ability to service their loan and on the value of the property. This means that energy efficient mortgages will represent a lower risk on the balance sheet of banks and could, therefore, qualify for a better capital treatment. Lower capital requirements deliver a strong incentive for banks to enter the market and, thus, drive a broader incentive chain, in which all stakeholders, including EU citizens, issuers, investors and society as a whole, derive a concrete benefit. Investments in building performance improvements could also help to free-up disposable income for borrowers through lower utility bills and can enhance property value. The mortgage and covered bond industries can help to bridge the renovation gap with a private financing initiative, which is independent from but complementary to public funds, tax incentives and utility rebates, and in this way support the EU in meeting its energy savings targets, whilst at the same time creating a strong link between the Capital Markets Union and energy efficiency agendas.

Significantly, the EeMAP initiative represents the first time a group of major banks and mortgage lenders, as well as companies and organisations from the building and energy industries have proactively come together to discuss the private financing of energy efficiency. In Finland, the EeMAP project work is carried out by Green Building Council Finland. To read more about the project, go to energyefficientmortgages.eu or contact GBC Finland (www.figbc.fi).
In Finland, there are 2.85 million dwellings, of which 1.15 million are individual dwellings and 1.7 million in multi-apartment buildings (figure 1). The housing production of 1970-80s is a result of the strong migration from the countryside to the cities. Urbanisation has re-gained momentum after 2010. The long tradition of urbanisation has left some dwellings empty, for example 15% of the dwellings built before 1970 and 8% of the ones built after 1970. Of the total number of dwellings, 10% are vacant. It is forecasted that the population of numerous (as many as 60%) municipalities will drop and that the number of empty dwellings will continue to rise in the upcoming years.¹

The combined total floor area of all residential, commercial and public buildings is 390 million square meters. Single dwellings account for 41% and multi-apartment buildings 33% of the total floor area. Private households own 65% of all buildings, directly or through the housing cooperative system. Households own 91% of all single dwelling buildings and 71% of the multi-apartment buildings as housing cooperatives. Companies own 20%, municipalities less than 10% and the state around 1% of all buildings. Of all single dwelling units, 85% are used by the owner. Only 3% of these buildings are rented and 10% are vacant. 42% of multi-dwelling buildings are used by the owner, while 21% are rented from institutional owners (state supported social housing) and 22% from private households or companies. 10% of these apartments do not have permanent residents.²

One key challenge regarding the improvement of Finland’s residential building stock is the cost of necessary renovation of the apartment buildings. The greatest barrier in covering these costs is the access to the needed funding. The cost of necessary renovation in the Finnish residential buildings in 2016-25 is annually 9.4 billion euros referenced at the 2015 cost level. Around 30% of this is concentrated in the six biggest cities: Helsinki, Espoo, Vantaa, Turku, Tampere and Oulu.²,³ Apartment buildings and single dwelling units constitute the main part of this cost with only a fraction being due to row-houses (figure 2). The biggest challenge lies in the 1960s–80s built apartment buildings (figure 3).
Finland has carried out persistent long-term work for energy efficiency with support granted by the Finnish Government. This support has included investment subsidies for conventional and new energy efficiency technology investments as well as grants for energy audits that have been available for businesses, industry and local authorities within the Energy Efficiency Agreements (EEA). The Finnish residential sector however has had only a few subsidies for improving the energy efficiency in housing conditions and these have been available only for special groups. These have included mainly household tax deductions for consumers (e.g. for repair work) and energy advice for consumers. Other possible tools to finance energy efficiency improvements of residential buildings are the aforementioned household tax deductions for consumers (e.g. for repair work), financing provided by companies offering energy efficiency solutions and products, use of ESCO models, financing the improvements by additional development where possible and pre-financing by creating a housing co-operative’s own renovation fund. Currently there are no governmental energy subsidies available for private residential buildings.

Green loans and green or energy efficiency mortgages are still at a very early stage and only one operator has offered a green loan (HYPO Ympäristölaina) on the Finnish market. Traditional loans can be used to finance energy efficiency improvements and the interest rate on these is still low. In Finland, financing energy efficiency investments has not been a problem when the applicant is creditworthy, the collateral asset is valuable, and the project is clearly economically feasible. However, which projects are feasible or not is debatable.

Based on the results of the EU-funded Build Upon project, there is an increasing interest among Finnish banks and financial institutions to improve energy efficiency. There is also a huge need to improve energy efficiency especially in the existing building stock and a recent study shows that more than 60% of housing companies are planning to improve energy efficiency through investments in the upcoming years. This shows that there is a strong market demand and opportunity for Energy Efficiency Mortgages.
Potential Energy Efficiency Mortgages could be based on using Energy Performance Certificates (EPCs) as an indicator of energy efficiency. EPCs have been in use in Finland since 2008 and they help consumers compare buildings’ energy efficiency. They give an overall picture of a building’s energy efficiency in a simple way, utilizing a classification scale familiar from household appliances. Nevertheless, EPCs for new buildings are criticised for being only estimates that differ significantly from the real energy consumption caused by the building users’ everyday life.

Energy Performance Certificates (EPCs) are needed for all new buildings along with a building permit application. For existing buildings, an EPC is needed when the building (or a part of a building, e.g., an apartment) is sold or rented. For residential apartment buildings and single-family houses built on or after 1980, the requirement took effect in June 2013 whereas for row-houses in July 2014. For single-family homes built before 1980, the new requirement took effect on July 2017. The requirement is the same for private and public buildings. The Finnish EPCs include basic information on the building such as type, size and address. The certification also describes the planned heating, ventilation and air conditioning (HVAC) systems. The essential part of the Finnish EPC is the building’s computational total energy consumption. This is referred to as the building’s E-value. According to the National Building Code of Finland, section D3 “Energy management in buildings”, E-value represents a building’s annual consumption of purchased energy, according to the heated net interior area (kWh/m² per year) and based on the standard use of the building type and weighted coefficients of the energy forms used. This E-value uses standardised estimates of purchased energy. The standardised estimate is evaluated based on the size and the planned use of the building. The weighted coefficients of the energy forms are decided on a high political level. However, they are based on scientific studies on environmental impacts of different forms. The classification levels of E-value from G to A are described in the annex of the Act 27.2.2013/176.

Buildings with low E-values have lower operating costs and their retail value is preserved better. The E-value functions to guide the granting of building permits in requiring an E-value low enough for the building permit to be granted. The E-value indicator can be used in new constructions to influence, among other things, the shape of the building, the design of window and door openings and other characteristics, and energy forms used. Differences between alternative solutions can be found with an E-value analysis.

The actual consumption of purchased energy must be reported on the EPC if it is available. The EPC also reports possible cost-effective actions to improve the energy efficiency of the building based on the EPC assessment, unless the building in case is new or one where renovation is not possible. Additionally, it can feature further information on buildings’ energy and environmental performance.

The EPC is produced by a qualified expert and is valid for 10 years. However, it is recommended, though not required, that the certificate is updated following major reconstruction of the building envelope or the technical systems, even if the works take place before the expiry date. The Housing Finance and Development Centre of Finland (ARA) ensures the quality of certificates and qualified experts and the appropriate preparation and use of the certificates. ARA can also make compliance checks of issued certificates and initiate administrative enforcement measures, such as requests, warnings, suspension of the qualified expert, in case of negligence on the part of the building owner or the qualified expert.
The EPC does not forecast the building’s actual use and energy consumption as it only assesses the building’s standardised consumption and does not fully consider the impact of the users’ actions. There are no large-scale studies that have looked at the correlation between EPC rating and actual energy consumption in Finland like in some other EU countries. The government and members of the supply chain (e.g. utilities) collect significant amounts of data on energy consumption. However, people involved in the Build Upon consultation process felt these are not always captured in the most useful way and that for instance, due to data protection legislation accessing quality data from energy providers is currently difficult.

The Housing Finance and Development Centre of Finland (ARA) maintains the Finnish EPC database. EPC data on new buildings has been collected since 2009. The share of E-values of recent buildings along the 2013 legislation can be seen in figure 4, indicating class C as the most common and E as the second most common class.

Figures 5 and 6 show that most new single dwelling buildings built after 2011 are in class C or B and multi-dwelling buildings are in class C. The figures show a vast improvement in the energy efficiency of new buildings in Finland but also clearly state the renovation needs of the existing building stock constituting mostly of E and F class buildings.11
Buildings account for 40% of all energy consumption in Finland.\textsuperscript{12} Residential, commercial and public buildings combined consume 73,300 GWh of energy yearly, of which residential buildings account for 75%. District heating is used in 90% of multi-apartment buildings as well as in 75% of commercial and public buildings. The use of district heating in multi-apartment buildings, commercial and public buildings lowers their share of total primary energy use. Single apartment buildings are heated with either domestic heating systems (55%, with gas, oil, wood, etc.) or electric heating (45%).\textsuperscript{13}

Usually the building or apartment level actual energy consumption data is not public nor open in Finland. Legislation on privacy does not allow the energy companies to publish energy data information of a specific building. Nevertheless, it would be possible to open data on a larger level, were the data to be anonymised. On a city level, usually the generalised energy consumption data is easily accessible. In Finland, the electricity is generally measured and invoiced by apartment or by house (i.e. dwelling unit) but the district heating and cooling is invoiced per building by the energy company and the housing companies divide the district heating or cooling costs based on floor area.

At least 80% of electricity network connections in Finland have a smart meter. Finland was one of the first countries to adopt smart meters and smart metering has been common practice since 2013. However, the uptake of smart appliances and data applications has still been slow, although numerous startups in Finland are developing sensor and databased building automation solutions for heating and indoor comfort optimization. So far the electricity companies have not introduced easy to use interfaces for third parties to use the data collected by the smart meter. Alternative meters have been introduced to the market that enable real-time tracking of consumption data and these often are included in the advanced building automation systems that have been introduced especially to office buildings. The current smart meters measure hourly based consumption and the data is available for the customer the next day.

For Energy Efficiency Mortgages, the open energy consumption data and smart meters could allow better analysis of the buildings’ energy efficiency based on actual, measured consumption. This would help to assess the results of possible energy efficiency improvements and the effects on lowered energy costs on the persons’ annual or monthly ability to pay back their mortgage.
Finland’s Long-term strategy for mobilising investment in the renovation of the national stock of residential and commercial buildings states that in single dwelling buildings, the most cost-effective measures for reducing heat loss include adding the thickest possible additional thermal roof insulation and replacement of the original windows. In multi-dwelling buildings, the most cost effective measures for reducing heat loss relate to using ventilation to reduce consumption. Forced general ventilation should be equipped with heat recovery and the transfer of heat to either central heating or hot water heating. If windows have reached the end of their service lives, they should be replaced with new ones that meet the requirements set for new buildings. Lowering the pressure is an efficient way of reducing water consumption. Energy can be recovered from waste water centrally. If external wall cladding needs to be replaced, it also pays to add thermal insulation.¹

There are also multiple initiatives that help home owners to plan retrofit activities and show how energy consumption before and after a retrofit can be predicted, including evidence of how accurate these predictions are. For example, E-PASS tool (cic.vtt.fi/epass/vtt) developed by VTT is an easy to use solution for assessing the feasibility of renovation action in residential buildings. It showcases typical renovation actions and their possible outcomes, for example energy and cost savings or payback times. NeZeR project (nezer-project.eu), also led by VTT in Finland, promoted implementation and smart integration of Nearly Zero Energy Building Renovation (NZEBR) measures and the deployment of Renewable Energy Sources (RES) in the European renovation market. A key outcome was a holistic, co-creation based NeZeR concept that includes feasibility studies, best examples, concrete actions via city action plans, stakeholder roadmaps to overcome renovation barriers, results of the innovation competition and communication help. Based on the project’s results the investment costs of a nearly zero energy building renovation are higher in the Nordic countries but there is also better potential in life cycle cost savings compared to more southern countries.

Another project, TARMO+ (www2.ekokumppanit.fi/tarmo) brings energy service companies and users of their services together and aims to help housing cooperatives plan and execute high quality repair processes leading to low carbon solutions and lower energy costs. TARMO+ also offers great examples of possible and realistic energy renovation results based on actual renovation projects. The project EU-GUGLE (eu-gugle.eu) aims to reduce primary energy consumption by 40 – 80 % and increase renewable energy use by 25 % through nearly zero-energy building renovation models for initiating large-scale, Europe-wide replication in cities and communities. In Finland, the pilot buildings’ energy savings due to renovation were 40 percent. The results prove that staged renovation is possible and different buildings need different strategies and technical approaches.

Some energy agencies provide their clients with support and energy advice at local level. Additional energy efficiency tips and tools can be found at Taloyhtio.net as well as from the Eneuvonta.fi site. The Build Upon project has listed Finnish energy efficiency initiatives on the RenoWiki site (fi.buildupon.eu).
Energy efficiency improvements and retrofit actions can often be combined with improving other aspects of building, such as comfort, quality and resilience. The building certification systems used on the Finnish market account for this wider assessment of building performance, but their use has been traditionally concentrating on commercial real estate in Finland.

The international LEED and BREEAM certification schemes have ruled the Finnish market, but most recently the Building Information Foundation RTS has released a new national RTS Ympäristöluokitus tool. It has been developed in wide collaboration with the industry. It was originally designed for the public sector’s use but can be applied to commercial buildings and even apartment buildings. The Ecolabel Swan, known as Joutsenmerkki in Finland, recently released its environmental classification for buildings, which is the first environmental certification scheme directly addressing residential buildings in Finland.

A more practical example of going beyond energy in renovation is the Climate Street project (ilmastokatu.fi) that aimed to create the city of the future that is low carbon and adapted to climate change. Existing built urban environments around Iso Roobertinkatu street in Helsinki and Tikkuraitti and Asematie streets in Vantaa searched for new solutions to cut down greenhouse gas emissions and energy consumption levels. The solutions were developed and experimented in cooperation with each area’s businesses, real estate owners, residents and the city administration.
CONCLUSIONS

Existing residential buildings have significant potential for reduction of their energy consumption. However, this will not happen without additional financial support even though many Finns are eager to renovate their homes as they might not be eligible for additional renovation loans.

The loan stock of households reached € 30.8 billion by the end of 2016. Around € 16.5 billion of this is formed by the debt of households, for example ordinary housing co-operatives’ loans. Mortgages reached € 94 billion by the end of 2016. This means that household credit already amounts up to 25% of the total amount of mortgages. The bank of Finland predicts that the annual growth of the total amount of household loans will be 10%, which is four-fold compared to the annual growth of the normal mortgages. This means that the debt of the households is growing and that it could severely limit their mortgage affordability and therefore their ability to renovate their buildings as would be needed. The main challenge is created by the sufficiency of the collateral securities and the applicant’s mortgage eligibility.14, 15

Energy Efficiency Mortgages could potentially help solve this national problem and at the same time benefit the banks and other actors of the renovation sector in addition to the building owners who would gain benefits from the renovation itself. Also, all new buildings are to be built according to the legal nZEB requirements after the year 2020, but new residential construction would also highly benefit from the support provided by the Green or Energy Efficient Mortgages as it would speed up the transition to high-performing sustainable homes.

The Green or Energy Efficient Mortgage system could use the existing EPC system as the starting point. Energy Performance Certificates could be used for assessment of the energy demand for the green mortgage purposes for both new built and modernized buildings. Additionally, in existing buildings the available data on measured energy could be used. At the moment Joutsenmerkki is the only sustainability certification available for residential buildings in Finland. Based on the discussions in the EeMAP project it would not directly fit to be used for performance verification in this kind of mortgage process. The market might benefit from having an additional, simple and straightforward certification method for residential buildings that would also fit the needs of the banks regarding the Green or Energy Efficient Mortgage system.
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