ALIGNING GREEN MORTGAGES IN THE NORDICS WITH THE EU TAXONOMY

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

The EU's objective to reduce emissions of greenhouse gases by 2050 requires extensive renovations of the building stock. The EU taxonomy harmonises what investments are environmentally sustainable (i.e., green). This will be decisive in overcoming uncertainty and helping companies and investors channel funds towards green activities. Nevertheless, evidence suggests room for improvement in aligning the taxonomy with the Nordics.

We identified two areas where the current framework might be partially limiting the effectiveness of the taxonomy. First, some buildings cannot comply with the taxonomy's threshold of a 30% energy efficiency increase. This results in environmentally improving and financially attractive renovations being excluded from the taxonomy. Second, the framework gives banks incentives to divert resources from renovations towards purchasing existing buildings or new construction. This may be inefficient and risks contributing to more CO2 emissions in new construction, where existing regulations already provide that any new buildings must be energy efficient.

We put forward three recommendations to address these challenges and increase the taxonomy's effectiveness in the region.

First, a less strict criterion for energy consumption improvement should be considered. Slightly relaxing the threshold could lead to more extensive high-impacting renovations. Second, the taxonomy should contain mechanisms to allow a higher proportion of the building stock of a renovated home to be taxonomy compliant. This would aim to correct the incentives skewing capital flows to constructing new buildings, leading to fewer renovations and additional avoidable carbon emissions. Third, also aimed at adjusting unbalanced incentives, the application of the taxonomy to new construction and purchase of existing houses should be revised. A sensible approach could entail limiting the scope of these green mortgages to houses built before a particular year (e.g., before 2000).

CHAPTER 1
INTRODUCTION

The European Commission has put forward the European Green Deal, aiming at reducing emissions by 55% by 2030 compared to the 1990 level.[1] A renovation wave of the European housing stock is needed to achieve this. The Nordic Energy Efficient Mortgages (NEEM) Hub focuses on scaling up energy-efficient mortgages for households in the Nordics, thereby contributing to the renovation wave.

In this paper, we identify areas where the EU taxonomy for sustainable activities[2] could further contribute to the adoption of green mortgages in the Nordics and put forward recommendations to achieve it.

First, we reflect on the importance of the EU taxonomy to the sustainable transition acknowledging that it requires significant investments in building renovations. *Second*, we explain how the EU taxonomy could in some instances be at odds with the Nordic markets and identify two areas where further alignment could be achieved. *Third*, we present three recommendations to increase the taxonomy's effectiveness in the region. We conclude by recognising the taxonomy's merits in accelerating the transition while underlining persisting challenges and how our proposals could lead to improving its effectiveness in the Nordics.

1 European Commission, see link
2 European Commission, see link

CHAPTER 2

THE EU TAXONOMY AND GREEN MORTGAGES AS CRITICAL TOOLS TO SUPPORT THE GREEN TRANSITION

The sustainability transition requires action from multiple stakeholders and orienting capital flows to green investments. In this section, we briefly reflect on the role of financial institutions and the importance of the EU taxonomy in contributing to financing the investments in building renovations required by the transition.

2.1 EFFECTIVE GREEN TRANSITION REQUIRES SIGNIFICANT INVESTMENT IN BUILDING RENOVATION

An effective green transition will involve significant investments in building renovations. The financial sector is crucial in financing the investments needed to transition to a carbon-neutral economy. Among these, green loans and mortgages are essential, as evidenced by the EU's Strategy on Financing the Transition to a Sustainable Economy.[3] This strategy identified the need to foster the uptake of sustainable financial products by households and highlighted the role of green loans and mortgages in advancing the sustainable transition. The EU taxonomy framework seeks to accelerate the sustainable transition by promoting sustainable investments, including through the uptake of mortgages for renovations.

The need for significant investments in building renovations is underlined by the fact that in Europe buildings are one of the largest sources of energy consumption, accounting for around 40% of the EU's total energy consumption and 36% of CO_2 emissions.[4] While regulations on new buildings will provide incentives to improve the efficiency of the building stock over time, their short-term impact on the sustainable transition is likely insufficient. Most of the building stock that will exist in 2050 has already been built and is currently energy inefficient.[5]

2.2 THE TAXONOMY CAN CONTRIBUTE TO MORE RENOVATIONS

Implementing the EU taxonomy has significant effects on the role of financial institutions in the transition and can contribute to more green renovations. It clarifies what activities are *green* and ensures a focal point to measure each institution's involvement in sustainable activities: the *green asset ratio*[6].

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3 European Commission, see link

4 Cambridge Econometrics, see link

5 Danish Energy Agency, see link

6 The EU taxonomy for sustainable activities requires undertakings to disclose how and to what extent their activities are associated with environmentally sustainable economic activities. The *green asset ratio* measures the proportion of sustainably financed economic activities and sustainable investments (i.e., compliant with the EU Taxonomy) as a share of total assets.

First, the EU taxonomy initiative provides harmonisation and clarity on what activities and related investments are environmentally sustainable (i.e., *green*). Clarifying otherwise unreliable criteria reduces uncertainty, searching costs and risk, helping companies and investors channel funds towards green activities.

Second, by introducing the *green asset ratio*, the EU taxonomy provides a transparent focal point on which banks are incentivised to compete. The *green asset ratio* measures the proportion of assets financing taxonomy-compliant activities and investments as a share of total assets. Reporting this metric prevents a situation where institutions could publish non-comparable metrics of their own, thus casting opacity over their commitments to the transition. Instead, with the harmonised focal point provided by the *green asset ratio* banks will increasingly compete in objective commitments. This will encourage banks to finance taxonomy-compliant (i.e., *green*) investments.

Financial institutions have incentives to compete in green asset ratios because it can impact their costs of funding. While the demand for sustainable investments grows, investors will likely favour institutions with high green asset ratios. The reason is twofold. *First*, high green asset ratios may signal less risky portfolios to investors, as environmentally sustainable investments are increasingly considered to mitigate risks associated with moving towards more demanding climate policies. *Second*, investors' preferences are likely to reflect reputational considerations. Seeking to obtain reputational benefits, investors prefer associating with organisations capable of demonstrating solid commitments to the green transition. Moreover, banks internalise changing consumers' preferences, increasingly favouring sustainable products and service providers.

CHAPTER 3

HOW THE EU INITIATIVE IS AT ODDS WITH THE NORDIC MARKETS

Despite its merits in contributing to the green transition in the Nordics, the effectiveness of the EU taxonomy faces some challenges. The initiative aims to contribute to re-orient capital flows towards green investments, accelerating the sustainable transition. However, as we will outline in the following, we see some misalignment that may hinder the current framework's full potential with the regional characteristics of the Nordics.

We focus on two main challenges:

1) Some environmentally improving and financially attractive renovations are excluded from the scope of this taxonomy.
2) Banks have incentives to prioritise mortgages for new houses over mortgages for renovations.

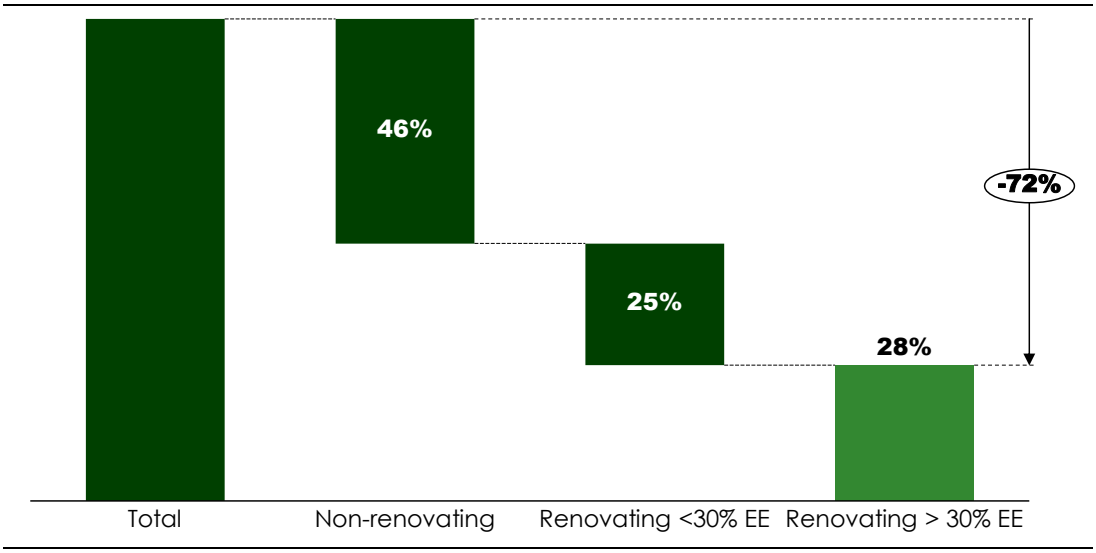
3.1 SOME ENVIRONMENTALLY IMPROVING AND FINANCIALLY ATTRACTIVE RENOVATIONS ARE EXCLUDED FROM THE SCOPE OF THIS

The current framework excludes some environmentally improving and financially attractive renovations from its scope. A mortgage for renovating an existing building is taxonomy compliant if the renovation reduces the energy demand of primary energy demand (PED)[7] by at least 30%.[8] However, in our research in the NEEM hub (see separate publications on the NEEM core solution), we find several cases where renovations do not lead to a 30% (or higher) but are still financially attractive and contribute to green transition; see **Figure 1**.

[7] "*The calculated amount of energy needed to meet the energy demand associated with the typical uses of a building expressed by a numeric indicator of total primary energy use in kWh/m2 per year and based on the relevant national calculation methodology and as displayed on the Energy Performance Certificate (EPC).*" (EU Taxonomy - ANNEX 1 on the *Technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives*).

[8] See Appendix.

Figure 1 Share of housing for which renovations are financially attractive and breakdown per optimal energy efficiency (EE) threshold



Source: Copenhagen Economics

From a sample of 100 houses in the Triangle Region Denmark, we find that (i) renovations are financially attractive in just above half of the cases and that (ii) only in around half of these cases was it optimal for the households to attain an energy efficiency improvement above 30%. In this case, around half of all renovations would be excluded from taxonomy compliance. This outcome is consistent with our findings in previous work, according to which the costs outweigh the benefits of energy renovations in the higher ranges of energy efficiency; see **Box 1**.[9]

[9] Copenhagen Economics, see link

Box 1 Energy renovations have declining returns

In 2021, Copenhagen Economics produced a report on the *impact of minimum energy performance standards in the revision of the Energy Performance Building Directive* commissioned by Housing Europe. In that report, based on housing stock data from the Netherlands, Germany and Austria, we found strong evidence that:

- The relationship between the costs and the benefits of energy renovations is not the same for all energy efficiency levels.
- In the higher ranges of Energy Performance Certificate (EPC) labels (i.e., energy efficiency), the costs outweigh the benefits of energy renovations. This was the case for renovations leading to EPC label improvements from B to A and from A to A++++.
- Increasing the EPC label from B to A is substantially more costly than raising it from D to C and yields relatively smaller energy savings, i.e., higher marginal costs for a smaller benefit.
- Aiming for the highest EPC label in energy renovations delivers poor returns for society, yielding higher marginal costs for a smaller benefit. In other words, renovations have sharply declining returns.

Source: Copenhagen Economics

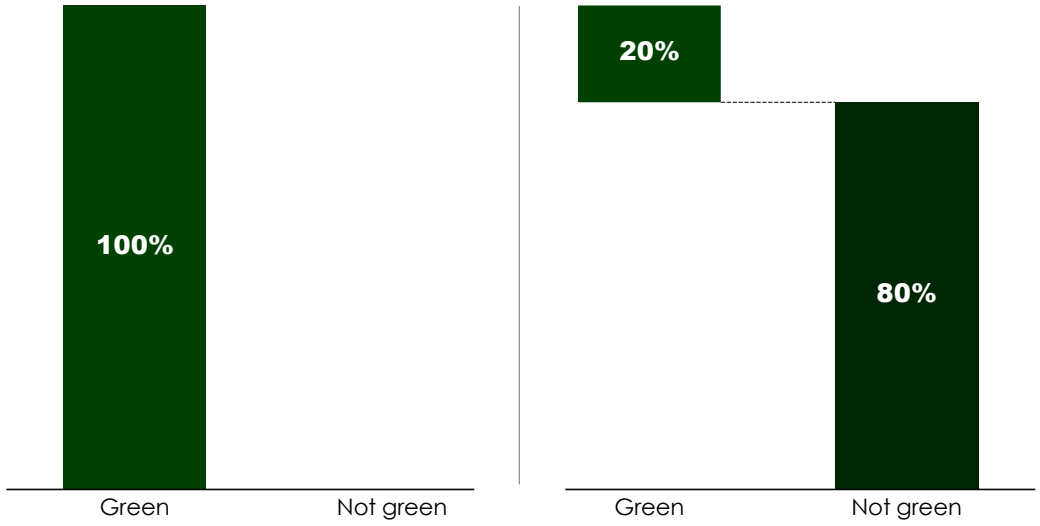
This evidence results from applying a cost renovation model developed by Copenhagen Economics that determines for each house whether renovating it is financially beneficial to the household and the scope of renovation that maximises the household's financial net benefit. More comprehensive renovations in scope translate into higher reductions in primary energy demand.

3.2 BANKS HAVE INCENTIVES TO PRIORITISE MORTGAGES FOR NEW HOUSES OVER MORTGAGES FOR RENOVATIONS

Legal requirements in the Nordics ensure that new buildings are almost always highly energy efficient. Under the current framework, the entire mortgage for new construction or purchasing existing buildings can be taxonomy compliant.[10] In contrast, in the case of building renovations, only the renovation costs fall within the scope of the green taxonomy. See **Figure 2**, which illustrates a situation where renovation costs account for 20% of the building stock of a renovated home.

[10] See Appenidx.

Figure 2 Example: Share of the mortgage that is taxonomy compliant (mortgages for new buildings vs mortgages for building renovations)



Source: Copenhagen Economics

Faced with different investment possibilities, we expect banks will prioritise investments that can be fully accounted for as *green*. That is, financing mortgages for new houses or purchasing existing houses is a much more effective way for banks to increase their *green asset ratio*.

This occurs despite both types of buildings (the new and the renovated) possibly being equally energy efficient. Indeed, there is no guarantee or safeguard ensuring that the newly built or purchased house will be more efficient than the renovated one. Such imbalance in banks' incentives can, to some extent, be misaligned with the objectives of the EU taxonomy in two ways:

First, it diverts resources from green renovations, which are vital for an effective energy transition. Unbalanced incentives towards directing funding for mortgages destined to build new houses or purchase existing ones will limit the taxonomy's potential benefits in promoting renovations. This can result in a lower total number of renovations being carried out.

Second, diverted resources will be partially channelled towards building new houses. The reason this amounts to an inefficient allocation of resources in promoting the transition is twofold. On the one hand, new construction is a highly carbon-intensive activity.[11] On the other hand, existing regulations already provide

[11] E.g., "*10% of Denmark's CO2 emission stems from the production of building materials and the building processes*", Regeringens klimapartnerskaber – the construction industry, see link. The 2022 Global Status Report for buildings and construction (see UN environment programme at link) also stresses the importance of avoiding emissions in new construction: "*all emissions associated with materials and construction processes – need to be tackled soon to avoid undermining the carbon reductions achieved from energy saving measures.*"

that any new buildings must be energy efficient. Moreover, since renovations are significantly less costly relative to building new houses, from a policy perspective, prioritising funding for the latter can lead to an inefficient allocation of resources. Marginal gains in additional new energy-efficient buildings come at the much higher cost of diminishing the number of renovations (a more efficient way of promoting the sustainable transition) and contributing to new CO_2 emissions.

CHAPTER 4

WHAT CAN BE DONE TO INCREASE THE EFFECTIVENESS OF THE EU TAXONOMY IN THE NORDIC MARKETS?

The EU taxonomy aims to catalyse the sustainable transition by promoting investment in green. Considering the challenges identified, we put forward three recommendations intended to increase the taxonomy's effectiveness in the Nordics:

1) Consider whether a less strict criterion for green renovation can facilitate access to green mortgages and increase green renovations
2) Allow the entire building stock of a renovated home to be taxonomy compliant
3) Revise the application of the taxonomy to new construction and purchase of existing houses

4.1 A LESS STRICT CRITERION FOR GREEN RENOVATIONS CAN FACILITATE ACCESS TO GREEN MORTGAGES AND INCREASE GREEN RENOVATIONS

If more renovations being labelled taxonomy compliant leads to lower renovation costs, a less strict criterion for green mortgages can result in more renovations and renovations having a more significant impact on energy reduction. A less strict criterion for energy consumption improvement that facilitates access to the taxonomy should therefore be considered.

A taxonomy-compliant renovation can provide access to better financial conditions. This occurs if increasing demand for green investments results in lower funding costs and if that *green discount* is partially passed through to lower capital costs for building renovations.

The presence of a meaningful green discount is still unclear. Nevertheless, if financing costs are lower due to a green discount, we would expect to see deeper renovations; the marginal running capital costs of renovating will be smaller. As marginal costs of improving energy efficiency are increasing, we would expect to see deeper renovations for renovations now being taxonomy compliant.

4.2 ALLOW THE ENTIRE BUILDING STOCK OF A RENOVATED HOME TO BE TAXONOMY COMPLIANT

The taxonomy should place mechanisms allowing banks to incorporate a higher proportion of mortgages on renovated houses in their green asset ratio. As

argued above, under the current framework, banks' incentives are skewed towards financing new energy-efficient buildings rather than renovations, even though it is energy renovations that are crucial from a transition perspective.

Allowing the entire mortgage of a renovated building to be taxonomy compliant could correct the unbalanced incentives that result in the capital flowing to the construction of new buildings at the expense of more green renovations and additional avoidable carbon emissions.

This would contribute to balancing banks' incentives to provide green mortgages for renovations. In addition to having a less strict energy efficiency criterion for renovations, this could further improve the taxonomy's effective alignment with green mortgages in the Nordics.

4.3 REVISE THE APPLICATION OF THE TAXONOMY TO NEW CONSTRUCTION AND PURCHASE OF EXISTING HOUSES

It could be considered whether applying the taxonomy to new houses is needed where building regulations already ensure that any new houses are energy efficient. From a climate perspective, including new buildings has little added value. On the contrary, labelling mortgages for new buildings as *green* could promote the construction of new buildings as they could get a green discount and thus lower funding costs, which does not serve green transition.[12]

A sensible approach could entail limiting the scope of these green mortgages to houses built before 2000, i.e., those with a greater likelihood of being efficient due to renovations and not simply because existing regulations at the time of construction already ensured such efficiency.

[12] Essentially, applying the EU taxonomy to green mortgages aimed at financing new construction will render some construction projects that are on the margin profitable, i.e., marginally increasing the number of new buildings. From a sustainability point of view, the effect on the green transition is likely to be negative, as it will (i) divert resources from building renovations where energy efficiency can be achieved at a lower cost and (ii) lead to otherwise avoidable carbon emissions associated with construction and production of construction materials.

CHAPTER 5
CONCLUSION

The *green taxonomy* is vital in fostering environmental building renovations through the uptake of *green mortgages*. Nevertheless, the taxonomy's effectiveness in the Nordics can be further improved. The current framework (i) excludes from its scope environmentally improving and financially attractive renovations and (ii) gives banks incentives to favour new construction instead of renovations, at the cost of inefficiency and possibly more emissions. We put forward three recommendations to increase the taxonomy's effectiveness in the Nordics. *First*, consider a less strict threshold for energy consumption improvement. *Second*, allow a higher proportion of the building stock of a renovated home to be taxonomy compliant to avoid the imbalance in incentives in favour favouring the new construction. *Third*, revise the application of the taxonomy to new construction and the purchase of existing houses.

APPENDIX – THE CRITERIA FOR MORTGAGES TO BE TAXONOMY COMPLIANT

The EU taxonomy identifies several construction and real estate activities, including three specific to buildings: construction of new buildings, renovation of existing buildings and acquisition and ownership of buildings.[13] In the context of green mortgages, under the current framework:

- A mortgage for the **renovation of an existing building** is taxonomy compliant, i.e., it can be labelled as a *green mortgage*, if the renovation leads to a reduction of the primary energy demand (PED)[14] of at least 30% or if the building renovation complies with the applicable requirements for major renovations as set in national and regional regulations.[15]
- A mortgage to finance the **construction of new buildings**[16] is deemed taxonomy compliant if the energy performance of the building is at least 10% lower than the threshold set for the nearly zero-energy building (NZEB) requirements in national measures implementing Directive 2010/31/EU of the European Parliament and the Council.[17]
- A mortgage to finance the **acquisition and ownership of residential buildings** [built before 2020], i.e., purchase of an existing building, can be taxonomy compliant if the building has at least an Energy Performance Certificate (EPC) Class A or is among the 15% most efficient buildings expressed as operational PED.

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13 The other activities identified within construction and real estate are *installation, maintenance, and repair of energy efficiency equipment*, *installation, maintenance, and repair of charging stations for electric vehicles in buildings (and parking spaces attached to buildings)*, *installation, maintenance and repair of instruments and devices for measuring, regulation and controlling energy performance of buildings* and *installation, maintenance and repair of renewable energy technologies*.

14 "The calculated amount of energy needed to meet the energy demand associated with the typical uses of a building expressed by a numeric indicator of total primary energy use in kWh/m2 per year and based on the relevant national calculation methodology and as displayed on the Energy Performance Certificate (EPC)." (EU Taxonomy - ANNEX 1 on the *Technical screening criteria for determining the conditions under which an economic activity qualifies as contributing substantially to climate change mitigation and for determining whether that economic activity causes no significant harm to any of the other environmental objectives*).

15 As set in the applicable national and regional building regulations for 'major renovation' implementing Directive 2010/31/EU. The energy performance of the building or the renovated part that is upgraded meets cost-optimal minimum energy performance requirements in accordance with the respective directive.

16 For buildings no larger than 5000 square meters.

17 Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (OJ L 153, 18.6.2010, p. 13).