

# A NORDIC ENERGY EFFICIENT MORTGAGE HUB

## A NORDIC HUB TO SCALE UP LENDING FOR ENERGY RENOVATIONS

We are proud to announce the establishment of a consortium to promote energy renovations of the Nordic building stock. This Nordic Energy Efficient Mortgages (NEEM) Hub will be comprised of experts from the financial sector, behavioural scientists, mortgage specialists and authorities on digital technologies from across the Nordics, all guided by Copenhagen Economics. The project will be a part of the existing Energy Efficient Mortgages Initiative and supported by Horizon 2020.

The EU green deal proposes a ‘renovation wave’ of the EU’s public and private building stock and requires Nordic governments to commit to ambitious climate targets and massive private investment. Over the next decade, we estimate that investments of up to EUR 50 bn are needed in the Nordics to be sure of reaching the current targets.

However, a substantial amount of the necessary investment, though profitable on paper, is not being carried out. This issue, which has come to be labelled the “energy efficiency gap”, is well-publicised and has been described in numerous research papers and articles.

The focus of the NEEM Hub will be to break-down the factors contributing to this energy efficiency gap and promote energy renovations in the Nordics. To do this, we have identified five barriers to address:

- *Behavioural barriers*, including limited information and high perceived complexity, leads to profitable renovations not being undertaken.
- *Transaction costs* can amount to up to 40% of the total costs when undertaking renovations.
- *Lack of finance-ready data* causes a fundamental problem in the entire value chain of energy renovations.
- *Financial barriers* such as potential risk mitigating factors of green mortgages not being fully exploited.
- *Regulatory barriers* need to be addressed to ensure, among other things, that the newly adopted taxonomy is fit for lending to energy renovation projects in the Nordic countries.

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*As the coordinator of the Energy Efficient Mortgages Initiative (EEMI), we are delighted to participate in the Nordic Energy Efficient Mortgage (NEEM) Hub which represents a very significant step forward in our vision to roll out energy efficient mortgage ‘ecosystems’ across Europe and beyond. The particularly innovative aspect of NEEM is its focus on consumer behavioural research and digitalisation/FinTech – we are confident that NEEM will be very instructive for other national hubs in these respects.*

*Source: Luca Bertalot, Secretary General at EMF-ECBC*

A common denominator for the barriers is that, through their touchpoint with end customers and ability to finance the investments, financial institutions are in a perfect position to overcome them. Therefore, the NEEM Hub will adopt a bank-centric approach in breaking down the identified barriers to develop concrete solutions ready for implementation in the banking sector throughout the Nordics. Nordea and Swedbank, and the green fintech start-up, Hemma, will act as market demonstrators, testing the developed solutions.

The solutions will be developed by:

- iNudgeyou, a behavioural science company.
- Green Digital Finance Alliance, a not-for-profit foundation with a mission to scale green finance with fintech.
- Danish Technical University, Applied Mathematics and Computer Science Dynamical Systems, contribution with recent research within the field.
- European Mortgage Federation, owner of the Energy Efficient Mortgage label and association of Europe mortgage lenders.

- The consortium of stakeholders developing solutions will be led by Copenhagen Economics, a leading Nordic economic consultancy, with a strong track record within climate and financial economics. Copenhagen Economics will apply this knowledge to develop solutions for breaking down the financial barriers.

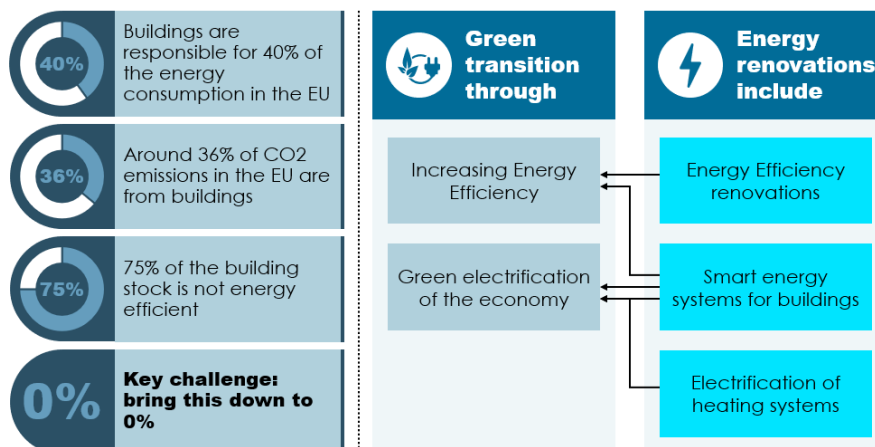
In addition, we will set up national and transnational advisory boards to connect stakeholders from the financial sector and the real economy to create an ecosystem where the involvement of all actors is assured on any solutions developed over the course of the project.

### WHY A NORDIC HUB?

The foundation of the hub is based on three assertions:

1. There is a real need for more investments into energy renovations to address the Nordic energy efficiency gap.
2. The possible remedies to the barriers are well-researched, and there is a strong political will amongst the Nordic countries to implement these solutions.
3. Nordic financial institutions are in a perfect position to implement the solutions.

**Figure 1**  
**Why care about energy renovations of buildings?**



### An energy efficient gap

Energy renovations are a crucial factor in reaching the ambitious climate targets for Europe, particularly in the Nordics with its the cold climate. Within the next ten years, energy renovations will have one of the smallest so-called CO<sub>2</sub> “shadow costs” in terms reducing CO<sub>2</sub> per invested EUR, offering better value for money than many other CO<sub>2</sub>-reducing initiatives.



*Swedbank’s vision is a financially sound and sustainable society where we empower people and businesses to create a better future. Driving a change like that is difficult to do alone. Therefore we are very excited to be a part of the Nordic initiative that really wants to make a concrete difference in enabling people to choose sustainable mortgages and housing.*

*Source: Fredrik Nilzén, Head of Group Sustainability at Swedbank*

Not only is an increased energy renovation rate sensible from a climate perspective, for many households and companies, it is currently financially profitable to undertake energy renovations.

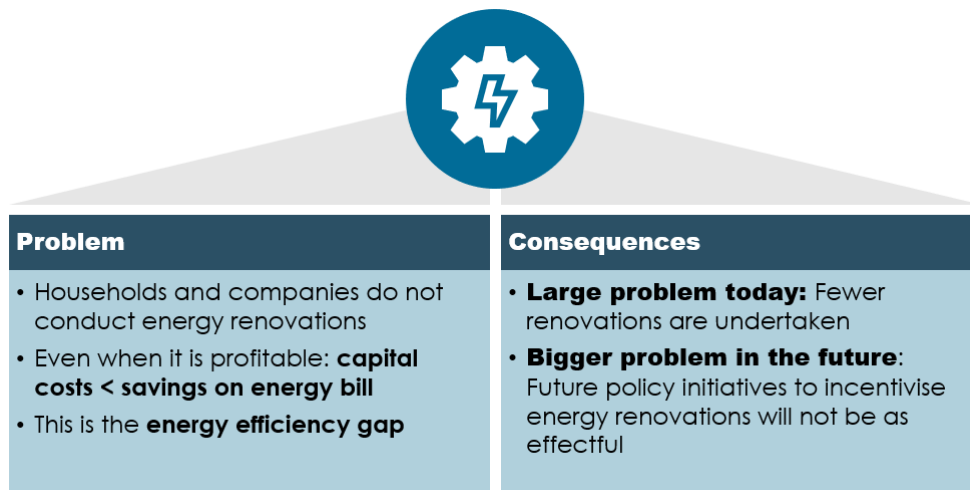
This leads to future savings in the form of lower energy bills, which can help to cover the renovation costs. Yet households and companies are failing to carry out these renovations, which is contributing greatly to the energy efficiency gap.

This problem is only likely to intensify in the future, as the economic incentives to carry out energy renovations are expected to increase through climate-friendly policies incentivising green investments. Thus, it is important to tackle the energy efficiency gap to ensure the maximum impact of future climate initiatives.

The hub will focus on a wide range of energy renovations:

- *Renovations that reduce the energy use of buildings:* better insulation, new windows, etc. will be the most important type of renovations over the coming 5-10 years.
- *Electrification of heating,* or a shift to district heating, will enable heating to be based on renewables.
- *Smart energy systems* will allow for a precise monitoring of heat and electricity consumption patterns and revealing the potential energy savings of a building.

**Figure 2**  
Energy efficient gap



The process will therefore be a gradual one, and we expect that the focus over the next decade will shift from energy efficiency to electrification and smart energy systems as fossil-fuel based energy production is gradually phased out.

**We already know the barriers and possible remedies**

The energy efficiency gap has been the subject of much scrutiny in recent years, and the causes behind it are well documented, not least by the members of the NEEM Hub, many of whom are experts on the topic. Such research has resulted in a number of high-level recommendations on how to tackle the energy efficiency gap: there is no one “silver bullet”, but rather a myriad of potential improvements are required throughout the value chain of delivering energy efficiency to end consumers.

There is at present no real implementation of the well-known strategies to overcome these barriers, and the current insights and learnings are not yet integrated with the necessary institutions that have the power and means to tackle them, a state of affairs that this project aims to rectify.

**Financial are in perfect position to help overcoming these barriers**

A common denominator for the barriers is that financial institutions are in a perfect position to overcome them,

through their touchpoint with end customers and ability to finance the investments.

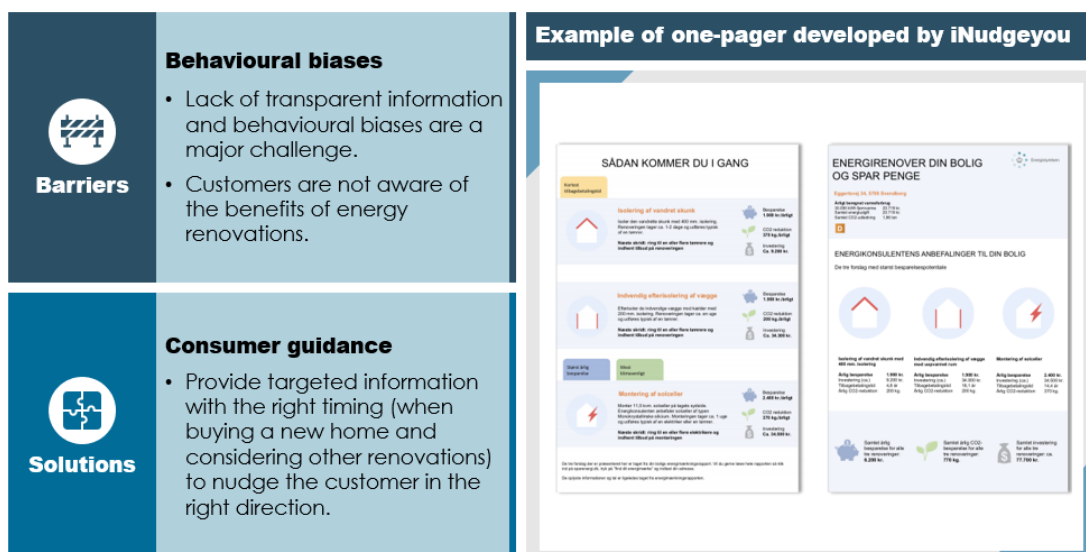


*We look forward to this cooperation as we hope it will enable us to further improve the technical platform we have built to assess, validate and monitor green investments in private homes. It is essential that the industry finds common ground and definitions to accelerate lending to efforts that will make a significant contribution to a carbon neutral economy. We look forward to participating in hands on market testing in cooperation with our industry colleagues.*

Source: Therese Ruth, CEO and Founder at Hemma

First, financial institutions have a unique customer contact. Energy renovations are often not profitable on a standalone basis and need to be combined with other types of renovations, with 90% of energy renovations taking place in connection with other renovations. In this instance, financial institutions are often in contact with customers when they decide to renovate due to their need to finance such projects. Whether in relation to a new house purchase or ongoing renovations to their property, financial institutions are well positioned to

**Figure 3**  
**Better information**



actively push energy renovations if it is deemed profitable for the customer.

Second, the large lending capacities of financial institutions in the Nordics make them obvious candidates to finance the necessary renovation wave without establishing entirely new financial structures.

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*We are delighted to support the Nordic Energy Efficient Mortgage hub on how to scale-up lending for energy efficiency mortgages. With our insights into the banking sector in the Nordics, we aim to contribute to reliable and functional solutions that will prove effective for reducing emissions and supporting the Green Deal.*

*Source: Johan Hansing, Head of Department at the Swedish Bankers Association*

as an idealistic (i.e. by reducing CO<sub>2</sub> footprint) point of view, renovation rates in Europe are low, accounting for only 1% of the current building mass per year.

We have identified five key barriers preventing renovation rates in the EU from increasing. The NEEM Hub will develop implementation-ready solutions to tackle each of these barriers.

### Behavioural barriers

Behavioural barriers arise from a limited availability of information, a lack of capacity to foresee potential benefits and costs, and a high perceived complexity and uncertainty. We have identified three areas where consumers experience high uncertainty:

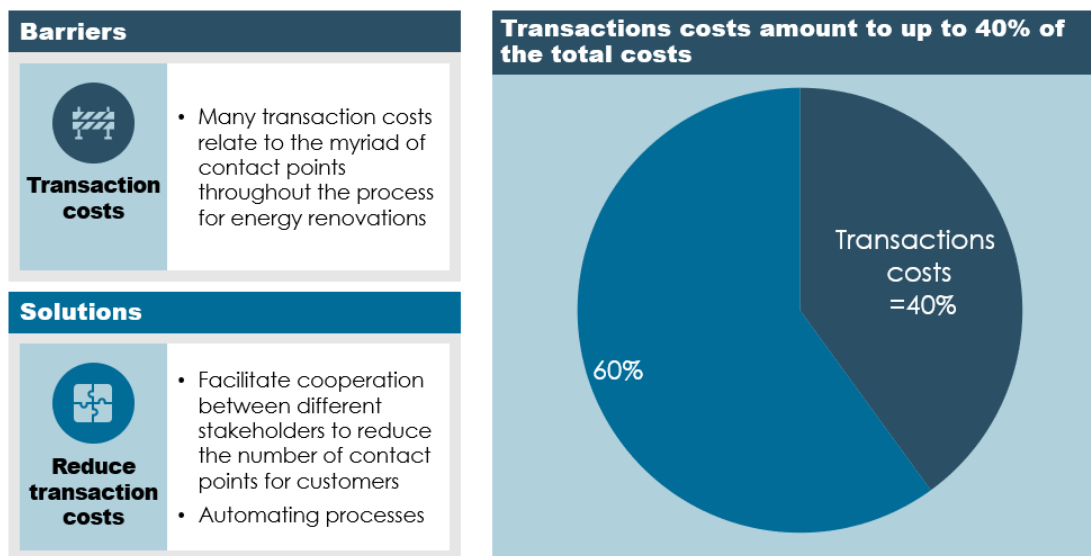
1. Whether an investment in increasing energy efficiency is cost-effective.
2. The expected increase in value of the building and a heavy discounting of future earnings.
3. The environmental impact the renovation will have.

## FIVE BARRIERS AND FIVE SOLUTIONS

Despite energy renovations often being attractive for households and companies both from a financial as well

To overcome these barriers we will develop targeted consumer guidance based on principles from

**Figure 4**  
Lower transaction costs



behavioural science theory. We will also investigate how financial institutions can play an important role in removing the complexity from the process.

**Transaction costs**

Transaction costs can amount to up to 40% of the total costs for small energy efficiency renovations. Most of these costs relate to the time spent by the consumer dealing with the myriad of contact points throughout the process for energy renovations. Finding the right contractor, carrying out the renovations, and uncertainty about the reliability of the contractor can contribute to transaction costs being high.

*To overcome this barrier* we will aim to lower the transaction costs by facilitating cooperation between different stakeholders to reduce the number of contact points for customers. This will allow financial institutions to act as a one-stop-shop, allowing consumers access to credible energy guidance without having to search the market for energy solutions and energy counselling.

**Lack of data**

A lack of data creates difficulty in identifying consumers in need of energy renovations, making it unclear which type of renovation would be most appropriate for a specific building. Better data is also needed for when the renovations have been completed in order to verify that

the renovations are delivered as promised, but acquiring such data can be cumbersome and costly.

*To overcome this barrier*, we want to utilise new types of data becoming available and combine them with existing databases to produce a digitalised, automated verification process for renovations. The Nordics is well-positioned as a region to test new digital data models for energy efficient mortgages. Denmark, for example, is highly adept in building data lakes for energy data in contrast to many countries where data is sourced from across different data siloes using various formats.

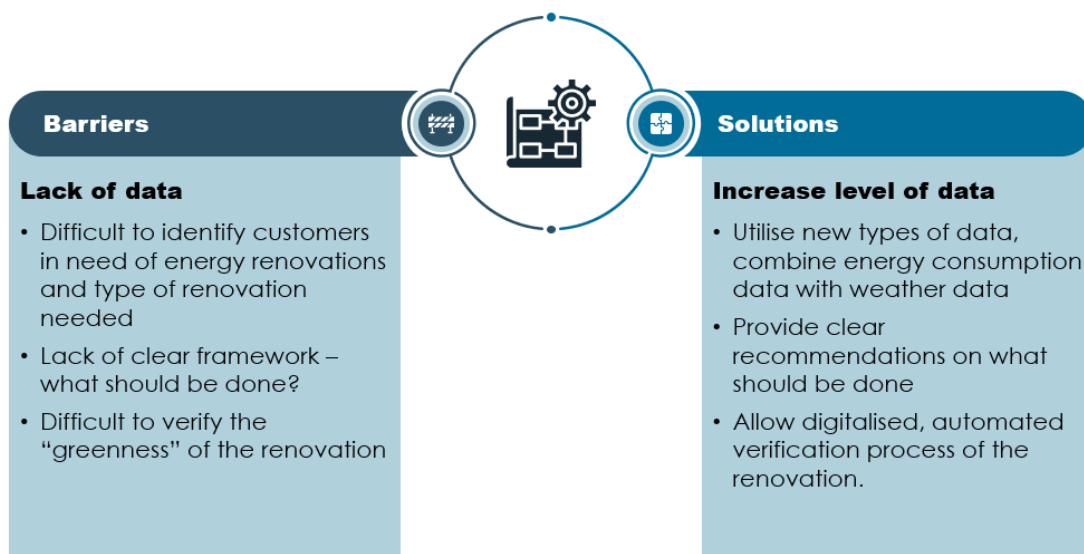
**Financial barriers**

Financial barriers are especially compelling for building owners with restricted financial means. These barriers are compounded by mortgage lending practices, which limit how energy renovation can be collateralised.

*Our solution* is to ensure appropriate risk management and capital issuance, taking into account the specificities of the Nordic financial system. This includes:

- Ensuring coherency between the EU taxonomy and Nordic mortgage model, i.e. avoiding that Nordic green covered bonds become outdated

**Figure 5**  
**Better data access**





when the EU taxonomy requirements are updated.

- Offer guidance on how to appropriately include any increases in collateral value from an energy renovation in the regulatory capital system.
- Instruct on how financial institutions can assess financial transition risks from buildings with fossil-fuel based heating.

Ultimately, this could eventually lead to lower risk-weights and, potentially, lower interest rates for consumers.

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*We at Nordea are proud to be part of the front-running efforts by the Nordic Energy Efficient Mortgage hub. The ongoing sustainability transition is crucial for our shared future, and we are determined to drive towards societies goals. Our role in testing out the proposed measures is an essential one, and we look forward to shaping a plan that has the practicality and resilience to truly make a difference.*

Source: Anders Langworth, Head of Group Sustainability at Nordea Bank Abp

### Regulatory barriers

Regulatory barriers, such as inadequate or missing regulation, prevent the uptake of energy efficiency investments. The newly adopted EU taxonomy must fit to Nordic mortgage models and Nordic energy classification systems. In addition, building owners have historically exhibited uncertainty about future potential regulations.

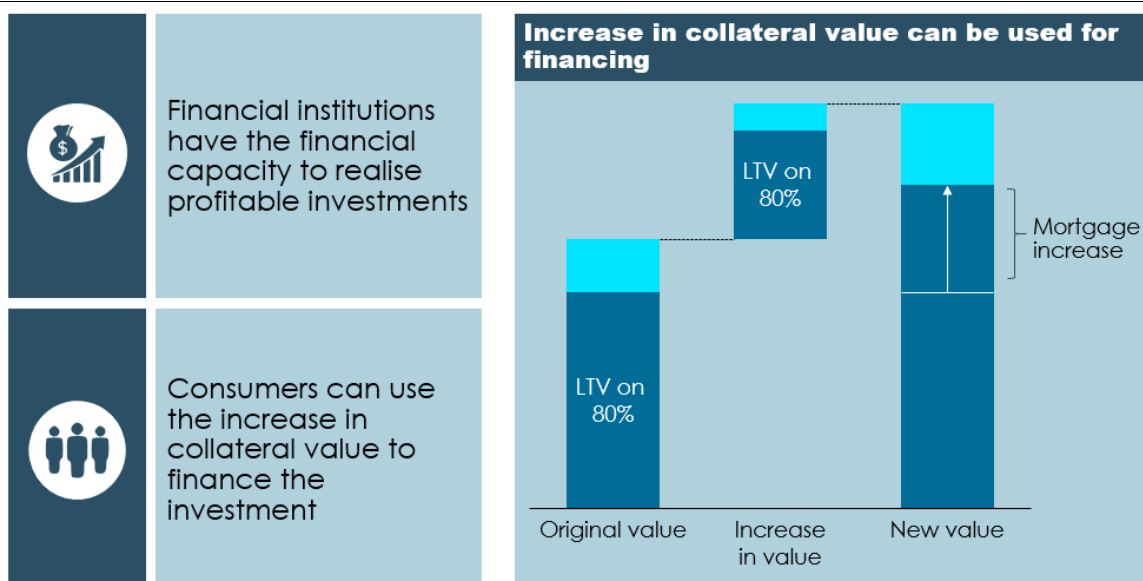
To overcome this barrier, we will develop regulatory guidance for policy makers at the national and European level to ensure coherency between the taxonomy and national energy classification systems.

Through such solutions and a focus on implementation, the NEEM Hub will be able to mitigate against these barriers and allow consumers to reap the benefits from energy efficient renovations.

### ACTORS IN THE HUB

Through the NEEM Hub, we will create an ecosystem that promotes collaboration between the actors across different sectors and countries to achieve the ultimate goal of simplifying the process of energy renovations for households and companies.

**Figure 6**  
Correct prudential treatment



In addition, we will set up several advisory boards throughout the Nordic countries and along the entire value chain of energy efficient renovations. Involving all relevant stakeholders from day one will ensure the solutions we provide will be suitable for all stakeholders.

Bringing these different actors together, each with their own unique insights into the problems faced, will help form a common understanding of the problems and how to solve them, making sure the energy efficient gap is significantly lowered.

**Advisory boards**

The project we will make use of two advisory boards and four national boards to guide our work. The objective is to bring together relevant stakeholders with in-depth knowledge of different aspects of the energy renovations and specific national circumstances to ensure there are no blind spots.

- *The financial advisory board* will be composed of financial institutions or financial sector associations with expertise in Nordic mortgage models and a detailed knowledge of lending to energy efficiency renovations.
- *The real-economy advisory board* will consist of real estate developers, companies active in retrofitting buildings, government agencies and ESCOs, all of whom have a practical knowledge of the barriers to energy efficient renovations.

- *The four respective national boards* will be comprised of national gatherings of stakeholders, from both the financial advisory board and the real-economy board.



**Technology is making homes smarter, greener, more sustainable, and cheaper to heat and power. As part of the NEEM Hub, we will use our expertise to package data related to these advances in ways that will empower Nordic society to strive for greener homes.**

*Source: Marianne Haahr, Executive Director a Green Digital Finance Alliance (GDFA)*

**Consortium**

The consortium behind the project is comprised of highly specialised experts from a range of fields involved in the promotion of energy renovations, finance and economics:

- iNudgeyou is a highly specialised applied behavioural research company. They are experts in applying behavioural insights to complex matters and develop behavioural solutions to overcome behavioural barriers. iNudgeyou has an ideal and unique position to contribute to this project: in 2019, iNudgeyou carried out the biggest public behavioural project within energy and climate in close collaboration with Financial institutions and financial trade

**Figure 7**  
**Advisory boards participants**





organisations. In this project they will work with breaking down behavioural barriers such as too many points of contacts.

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**Today, a huge gap exists between the intention and the action to conduct energy renovations. By applying insights from behavioral science, we wish to overcome the various barriers and make it easy and safe for homeowners to go from intention to action.**

Source: Jossi Steen-Knudsen, COO at iNudgeyou

- Green Digital Finance Alliance (GDFA) is an international non-profit organisation that works to leverage fintech and adjacent technologies to scale finance for the Paris Agreement. The GDFA will work on delivering new data solutions to financial institutions, both to better identify candidates for new energy renovations, but also to measure the impact of energy renovations once they have been carried out. Danish Technical University (DTU) Compute department will work under GDFA, providing advice, especially when it comes to developing and testing software algorithms.
- European Mortgage Federation (EMF) is leading the EU-wide EEM project allowing the NEEM Hub to acquire crucial experience from former projects. First, EMF will ensure that new learnings and measures in the EU project as well as EEM projects in other regions will trickle down to the Nordic initiative. Second, EMF will take up the role of policy coordination should the consortium partners identify that regulatory amendments are necessary on an EU level to accommodate Nordic-specific circumstances.
- Copenhagen Economics (CE), also involved with the EU EEM initiative, will take on the role of leading the project, employing our learnings from international research within financial economics, climate economics and energy renovations over the past decade. In particular, CE will leverage their highly developed research within sustainable finance (such as providing the analytical background for the Danish financial sector’s sustainable finance roadmap) and develop a regulatory capital framework for EEMs within the current EEM initiative.
- Finally, the solutions developed by the consortium will be tested as Minimum-Viable-Products within two of the largest Financial Institutions in the Nordics covering some 25% of all mortgage assets in the Nordics market, Nordea

**Figure 8**  
**The consortium participants**



and Swedbank, and Hemma, a Swedish green fintech mortgage lender. This ensures that the developed measures and solutions will be implemented and tested in real consumer settings.

**TIMELINE**

The NEEM Hub is a two-year project, commencing in June 2021 and completing in June 2023. The project will take a point of departure in the concrete barriers that consumers and financial institutions are facing. This will guide the solutions we will develop throughout the project, which will be tested with the financial institutions in the consortium. Finally, the results of these tests will be analysed and published, allowing for a scale-up of the solutions in the Nordics.

**Figure 9**  
Indicative timeline for the NEEM Hub

