

OPTION 1

Frederikshavn, Denmark | Key figures

BUILDING STOCK

29,761 housing units

72% individual houses

28% condominiums

67% privately-owned

33% social housing

75% owner-occupied housing units

25% rented

- 54% of housing units built before 1970 have high potential for energy savings
- Average cost of energy renovation: EUR 200/m²

TERRITORY

Area of 649 km²

23%

Carbon footprint of the city housing stock

PEOPLE

Population of 61,158



Majority

of households have sufficient financial savings to pay for energy renovation

In December 2014, Frederikshavn adopted a **Master Plan to become a 100% renewable energy city by 2030**. The key measures that will help achieve this objective are the reduction of energy consumption and ensuring increased energy efficiency in all the sectors, in particular in the

housing stock which accounts for 23% of Frederikshavn's CO₂ emissions. The objective of the municipality is to facilitate the energy renovation of **16,000 housing units built before 1970**, while reducing their energy consumption by at least 30%. The average cost of energy renovation

work for all types of residential buildings (individual houses and condominiums) is estimated at **200 EUR/m²**. An investment of **EUR 416 million** will be needed to achieve this goal.



The issue

A need to mobilise homeowners' savings for energy renovation of the housing stock

Frederikshavn carried out a **market study** which revealed that citizens have never had such large savings in their accounts as they have today. However, it is not easy to convince households to make use of these savings to carry out an energy renovation of their homes.

Indeed, a side effect of the global financial crisis is that **house owners fear using or borrowing funds** because they feel uncertain about their own economic situation in the near future. Moreover, the stagnation of property values over the last 7-8 years does not create an incentive for making investments in private properties.

To encourage the energy renovation of residential buildings, the Danish tax

authority provides **tax credits** of 2,015 EUR per capita per housing unit, and a maximum of 4,030 EUR per home.

The government also reimburses the **value of CO₂ savings** (from 0.35 to 45 DKK per kg of CO₂ savings) which is another form of subsidy for homeowners. The value of CO₂ savings will either be used to cover the cost of an energy consultant service, or be deducted from the homeowner's investment in energy renovation.

Solution

► **Set up a network of independent home energy advisors** who are employed by the Frederikshavn Utility and a 'Better Home' organisation. They provide individual and tailor-made technical assistance to homeowners. Advisors carry out energy audits and technical checks resulting in a **'Home Energy Report'**. This report recommends energy saving measures in order of priority and provides basic information about the annual energy and financial savings potential, estimated investment costs for each measure and its payback time. If the homeowner wishes to carry out other non-energy related measures such as house enlargement, renovation of the bathroom or kitchen, the Energy Advisor includes these measures in the report. The Energy Advisor also informs the homeowners about the soft loan schemes and refers them to their bank.

► **Establish partnerships with local banks** with two objectives:

- Train customer advisors about the benefits of energy renovation. The advisors improve their understanding of the 'Home Energy Reports' and are aware of the impact that the cash flow generated, thanks to energy savings, has on a household's financial situation. They are also able to provide better advice to their customers on the financial opportunities for energy renovation and offer them a tailor-made financial plan.
- Develop specific soft loans for the energy renovation of housing. The municipality convinced local banks to develop a new product with reduced interest rates and a longer maturity period compared to standard market conditions. The loans target those homeowners who cannot or do not want to use their financial savings (only) for energy renovation work. The city managed to create competition between the banks leading to spontaneous improvement of the loan conditions offered to homeowners. Cooperation is now established with 8 national banks' branch offices located in

the municipality: Nord Jyske Bank, Jyske Bank, Spar Nord Bank, COOP Bank, Danske Bank, Sparekassen Vendsyssel Bank, Nykredit Bank, Arbejdernes Landsbank. The COOP Bank which has recently opened its offices and wants to attract new customers offers a 0% interest rate loan.

► **Train and cooperate with local market actors** such as estate agents, craftsmen, construction companies and encourage them to contribute to the municipality's objectives. The city has developed a specific training programme to inform them about the benefits of energy renovation and build their capacities to promote and facilitate the energy renovation process for homeowners. Estate agents inform their clients about the benefits of energy renovation when they consider buying the property.

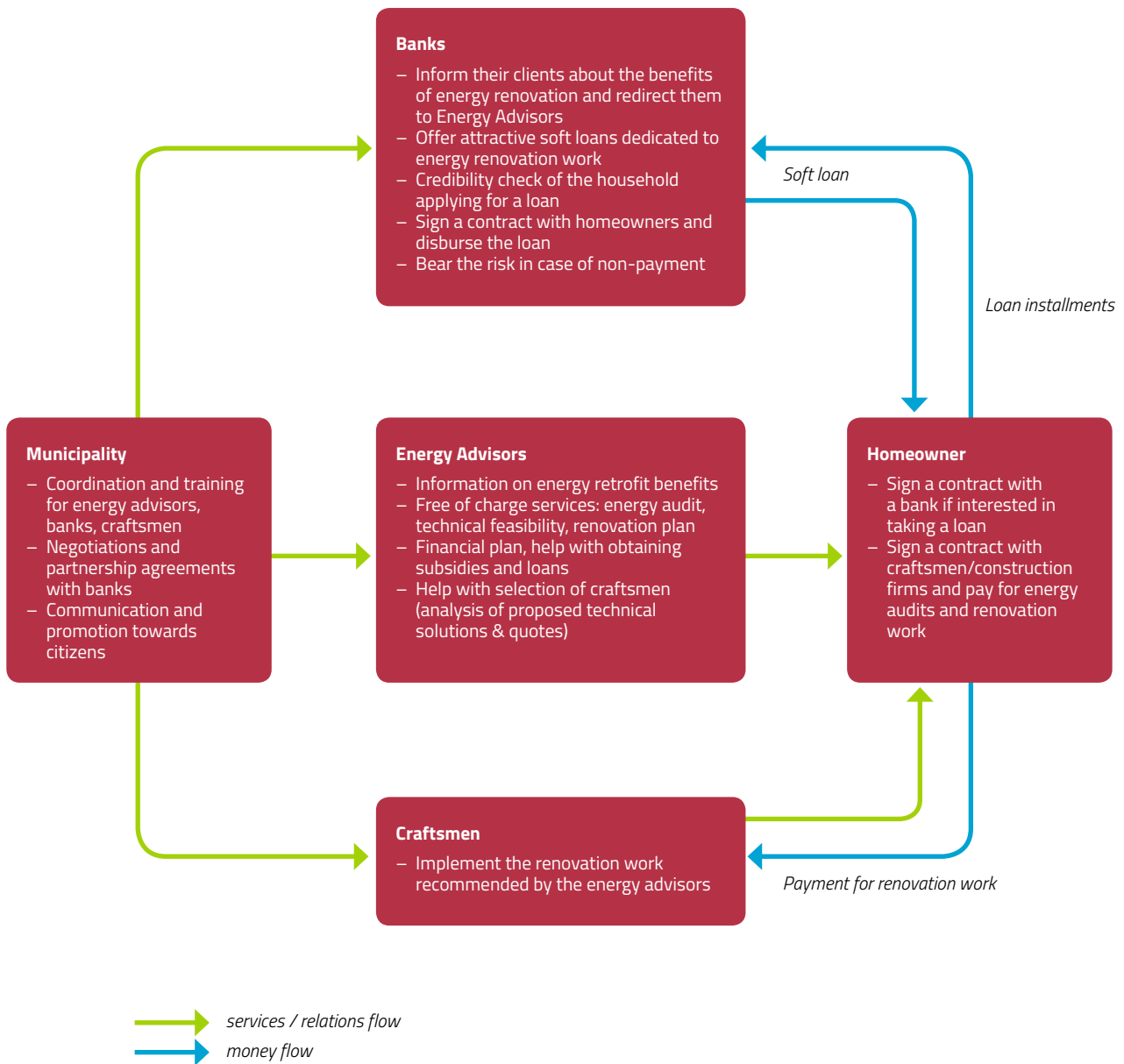
► **Actively promote the soft loans** through dissemination and the publication of positive customer cases related to energy refurbishment, a demonstration site of energy efficiency and renewable energy technologies, meetings with homeowners, local media and specialised local communication materials.

Business Model

The municipality does not allocate any funds to the financing scheme. Soft loans are provided by the partner

banks. They run a creditworthiness check of homeowners, decide who gets a loan and under what

conditions. All risk is borne by the partner banks.





Soft loan financing scheme step-by-step

Step	Action
Set up a team	<ul style="list-style-type: none"> - A project manager and a chief consultant from the Energy City Frederikshavn have worked on the soft loan scheme development.
Carry out a market study	<ul style="list-style-type: none"> - A market study was carried out to analyse the financial market and already existing financing instruments as well as to identify the growth potential for energy renovation of private properties. Interviews were conducted with individual bank directors. - Key findings: About 67% of housing units are privately owned. Of these, 75% are owner-occupied. 16,000 housing units which were built before 1970 (54% of the housing stock) have the greatest energy saving potential. Most of the homeowners have sufficient financial savings to be able to pay for an energy renovation, they are eligible for bank loans and money is not the main barrier to carrying out energy renovation of the housing stock. Some commercial banks offer loans dedicated to energy renovation. For example, Arbejdernes Land Bank had already allocated 2 billion DKK (€268 million) to loans for housing renovations, without actually lending the money, mainly because of citizens' uncertainty and risk aversion resulting from the financial crisis. - Key recommendations: develop a targeted communication and marketing strategy to convince people about the benefits of energy renovation work, coordinate key market actors to facilitate the energy renovation process to homeowners, convince local banks to offer attractive low cost loans to homeowners and help them launch a new business area.
Develop a business model	<ul style="list-style-type: none"> - The municipality positioned itself as the main coordinator and catalyser of the energy renovation process in the residential building sector. - The city did not want to disrupt the local financial market by setting up a specific municipal fund that would issue soft loans. The municipality justified its decision on the following grounds. The municipality: <ul style="list-style-type: none"> Should remain concentrated on the core municipal services it provides to its citizens, including spending a considerable annual budget on the energy renovation of public buildings. Must not appear to be a competitor for the private financial market by acting as a «public bank» but wishes to promote the development of a new business area (soft loans for energy renovation) for the banks. Does not have «unlimited funds» as the banks do to finance the energy renovation of private homes over the long-term. Is already financing preferential loans and guarantees for energy renovation of social housing associations. - Frederikshavn municipality observed an existing network and trustful relationship between banks and their customers, including homeowners as a customer segment. The banks could therefore become reliable partners in promoting energy renovation.
Set up strategic partnerships	<p>Partnership with banks</p> <ul style="list-style-type: none"> - The municipality started discussions with all local commercial banks with the objective of engaging them as the city's official partners in the energy renovation of the housing stock. - The banks have demonstrated interest in launching soft loans and have signed partnership agreements through which they undertake to: <ul style="list-style-type: none"> Increase the loan portfolio dedicated to energy renovations. Develop soft loans with more attractive conditions than standard market terms. Promote the idea of energy renovation to their clients and encourage them to invest their savings. Participate actively in the launch of the soft loan scheme along with the municipality and other market actors; and Convince the banks' headquarters to further develop this new business area and spread the concept of soft loans nation-wide. - Convincing arguments: the banks will not only develop a new business area for themselves but also for their clients - local contractors, suppliers of building products and estate agents. The uptake of soft loans for energy renovation is expected to boost the local economy and contribute to creating new jobs. Also, their clients' properties will increase their market value. Another benefit: the banks wanted to mobilise homeowners' «passive capital» in developing their business at a time of financial stagnation. - Difficulties: reaching an agreement on a fixed interest rate for energy renovation work. Banks determine the interest rate on the basis of the individual homeowner's financial situation and creditworthiness (e.g. homeowner's annual income, existing debt, house value, age, etc.). They have agreed to offer better than standard conditions to homeowners but have refused to agree to a fixed interest rate. Some clients can obtain a close to 0% interest rate.

Set up strategic partnerships	<p>Partnerships with key market actors</p> <ul style="list-style-type: none"> - Energy Advisors: the municipality cooperates with Frederikshavn Utility which employs energy advisors who provide free of charge advice to homeowners. It also associated the organisation Better Home, set up by five Danish companies selling products related to energy renovation (Danfoss, Rockwool, Grundfos, Velux and Velfac), with the scheme. Better Home also provides energy advisory services to homeowners but as this is a paid service, most of homeowners use Frederikshavn Utility. - The municipality involved craftsmen in the process, using the argument that energy renovation will boost the local building renovation market and increase their job opportunities. - Estate Agencies are interested in the scheme because the renovated properties are easier to sell which increases their businesses' turnover. - Cooperation agreements were signed with all the key stakeholders, including a definition of their roles and their interaction with other actors.
Launch the scheme & communicate	<p>Training</p> <ul style="list-style-type: none"> - The municipality organised a series of training sessions targeting all market actors. - Objective: to encourage them to contribute to the municipality's energy renovation programme, inform them about the benefits of energy renovation and build their capacities on how to promote and facilitate the energy renovation process to homeowners. - Results: The banks' customer advisors, craftsmen and estate agents inform their clients about the energy renovation benefits when they consider buying / renovating their property. 16 training sessions were organised for 8 participating banks, involving 125 bank employees. - Training participants received a list of energy advisors covering the municipal area which they provide to their customers. They also recommend those craftsmen who are covered by a «Building Guarantee» (Bygge Garanti) which guarantees the quality of the craftsmen' services. It is a kind of insurance that covers any loss or damage caused by low quality work that does not meet homeowners' expectations.
Launch the scheme & communicate	<p>Marketing & communication of the soft loans</p> <ul style="list-style-type: none"> - The municipality developed a communication strategy to inform homeowners about the free services offered by Energy Advisors as well as soft loans offered by local banks. - Among the most efficient communication and marketing tools: a City Info Truck that regularly visits neighbourhoods targeting particular buildings, meetings with homeowners, the municipal magazine, the city Facebook pages and website, promotion via partners' communication channels, etc. - The municipality also produced a promotional film on the benefits of energy renovation that is shown on TV screens at all DIY stores in the municipality, companies with min. 50 employees, banks and selected supermarkets. The film includes interviews with bank managers, homeowners, real estate agencies and energy advisors who talk about their positive energy renovation experiences. - However, it takes a long time to convince homeowners to take action. Despite an additional incentive and a media buzz around a municipal grant covering 100% of the renovation costs offered to the first homeowner to get a Home Energy Report done, the municipality has not managed to attract homeowners...yet.
Monitoring and improvement	<ul style="list-style-type: none"> - The home energy advisors report annually on the number of visits, home energy reports issued and measures implemented. - Partner banks report annually on the number and amount of soft loans issued. - When private homeowners use the «Better Home» portal (www.betterhome.today), they are automatically registered in a central system which can then provide information on the number of households located in Frederikshavn who have used the energy advisory services, soft loans and which craftsmen have carried out the work.



Homeowners' advantages

Energy renovation step-by-step









1. Homeowners visit a mobile Info Truck run by the municipality, visit their bank, estate agency or local craftsmen or find information about energy renovation in local media, in the municipal magazine or at public meetings. Citizens can also use the city website and Facebook pages to request a visit from an Energy Advisor.
2. They get information on home energy renovation benefits, services offered by Energy Advisors and soft loans offered by partner banks.
3. An energy Advisor visits the home and prepares a Home Energy Report.
4. The homeowner goes to a partner bank, selects the measures suggested in the Home Energy Report and applies for a soft loan.
5. They sign a contract with one of the partner banks and get a loan.
6. They sign a contract with certified architects, construction companies and craftsmen who signed a quality partnership charter with Frederikshavn or one of the banks and get the work done.

Energy renovation step-by-step

Eligibility criteria		
Type of housing	Type of households	Measures
-All types of housing in private ownership (not only buildings constructed before 1970) in the municipal area	- No specific conditions regarding the households' income	<ul style="list-style-type: none"> - Insulation of the building envelope - Electricity and heating systems - Ventilation and heat recovery - Renewable energy production technologies - Control and monitoring of energy devices - Other renovation work not directly related to energy efficiency improvement

Loan conditions

Loan amount, interest rate and maturity depend on the individual financial situation and creditworthiness of each homeowner. The property equity is viewed as a guarantee for the loan. The interest rate will be determined between the homeowner and a bank. It can be a variable or fixed interest rate while no interest is charged in the best cases. The conditions below indicate the existing standard market conditions offered by partner banks to households as of November 2016. The banks commit to offering loans with more advantageous conditions to Frederikshavn citizens.

<p>Lyske Bank</p> 	<p>Loan amount: 20,000 – 200,000 DKK (€2,700-27,000) Interest rate: two types of loan: 1. Boliglån 6.2 – 6.65 % or less, (variable, depending on creditworthiness) 2. Boligkredit 5 – 9 % or less (variable, depending on creditworthiness) Maturity: typically 10 -20 years (or less) Grace period: 6 or more months. More options are available, based on the negotiation with homeowners.</p>
<p>Spar Nord Bank</p> 	<p>Loan amount: N/A Interest rate: 4.46 % - 12.03 % or less (variable, depending on creditworthiness and property value) Maturity: up to 10 years. The maximum term of a home loan is 30 years Grace period: variable, typically up to 6 months.</p>
<p>COOP Bank</p> 	<p>Loan amount: 10,000 DKK (€1,350) – 80,000 DKK (€10,000) Interest rate: 0% Maturity: max 5 years Grace period: 0 month Low income homeowners are encouraged to implement energy renovation in several steps. Once the first measure is implemented and paid for through energy savings, the homeowner starts another measure. This model gradually improves the homeowner's creditworthiness as well as the value of the house.</p>
<p>Danske Bank</p> 	<p>Loan amount: variable, theoretical framework between 20,000 and 200,000 DKK (€2,700-€27,000), but in practice, and in most cases about 200,000 DKK (€27,000) Interest rate: 5.5 % - 13.6 % or less (variable, depending on creditworthiness). The homeowner may choose a fixed rate for 10 years or a floating rate. Maturity: An agreement between the bank and the customer. The loan can be redeemed at any time - maximum repayment period of 30 years. Grace period: individual agreements but recommended time is less than 6 months.</p>
<p>Sparekassen Vendsyssel Bank</p> 	<p>Loan amount: Not a fixed amount but typically varies between 50,000 and 300,000 DKK (€6,700-€40,300). Interest rate: not a fixed rate but typically varies between 5% and 9% or less. Maturity: up to 30 years. Grace period: up to 12 months.</p>
<p>Nykredit Bank</p> 	<p>Loan amount: variable, typically between 50,000 and 300,000 DKK (€6,700-€40,300). Interest rate: 3.3% - 10.0% (lowest interest rate for up to 60% of the house value, the highest rate for up to 100% of the house value) Grace period: individual agreements but recommended time is less than 6 months.</p>
<p>Arbejdernes landsbank</p> 	<p>Loan amount: two types of loan 1. Energy loan: up to 100,000 DKK (€13,500) with no requirement for a guarantee and 200,000 DKK (€27,000), with a requirement for a guarantee 2. Home loan: up to 250,000 DKK (€33,600). Interest rate: 1. Energy loan: variable depending on creditworthiness. Typically 6.6 %, when a guarantee is required and 7.1% when a guarantee is not required. 2. Home loan: 4.7 % - 9.6 % (lowest interest rate for up to 60% of the house value, the highest rate for up to 100% of the house value) Maturity: 1. Energy loan: up to 10 years 2. Home loan: up to 20 years Grace period: up to 6 months.</p>
<p>Nordjyske Bank</p> 	<p>Loan amount: 50,000-300,000 DKK (€6,720-€40,300) Interest rate: N/A Maturity: N/A Grace period: up to 12 months. Grace months do not need to be consecutive months.</p>



Financing scheme highlights

Strong points	Weak points
<ul style="list-style-type: none"> - No investment from the municipality into the scheme. - Access to 'unlimited' funds offered by the partner banks. Condition: banks are open to cooperation with the municipality, willing to test new products and offer low interest loans without any guarantee from the municipality. - Banks are more aware of the city climate goals and are actively involved as key actors. - The city is a trusted organisation and a 'guarantor' of the technical solutions and financial products offered by its partners. It puts a 'city stamp' on the products. 	<ul style="list-style-type: none"> - Low and very low income households are not eligible for bank loans. - The municipality does not guarantee energy savings achieved. - Energy Advisors employed by big companies (Better Home) may not be independent.

Need more details about this case study?

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