

RENOVATION IN PRACTICE

Best practice examples of voluntary and mandatory initiatives across Europe

Summary version

INTRODUCTION

As governments around the world formulate their responses to the combined challenges of climate change, energy security and provision of affordable energy, the ability to point to replicable schemes that successfully deliver improvements across all three areas is of paramount importance. Buildings are not only the most significant consumers of energy within the European Union (collectively accounting for 40% of the total consumption) – they also represent the largest untapped potential for energy savings and, with it, a reduction in greenhouse gas emissions, according to the International Energy Agency¹.

Scaling up building renovation, notably through reducing building heat loss and providing more efficient and clean heating systems is thus a priority for the EU. It is also the only truly sustainable solution for the scourge of fuel poverty, estimated to affect as much as one in five European citizens². Cutting energy use in buildings ambitiously would not only reduce the EU's energy import bill of over €1bn every single day of the year³ – it would also reduce peak demand and add flexibility to the grid, thereby decreasing the needed investment in generation and grid infrastructure⁴.

However, the task of improving Europe's building stock is a big and challenging one, requiring a total investment in the order of €1 trillion⁵. As such, the challenge should be

considered a major infrastructure project – an investment in the most important infrastructure there is, namely our homes and work places.

Policies and measures to improve the energy performance of Europe's building stock can and must play a leading role in addressing the triple challenge of climate change, energy security and affordable energy, yet they will also lead to other benefits. According to the International Energy Agency, these benefits include macro-economic development, enhanced health and wellbeing, improvements in public budget and lower air pollution. This creates a very compelling incentive to scale up Europe's building renovation activities to achieve the buildings' full potential and bring a wide range of complementary improvements to our economies, to society and to the environment.

This brief review illustrates how some governments and organisations are already addressing the challenge of renovating buildings. The cases chosen for this study followed a review of support measures applied in countries, regions and cities within the EU. In total, nearly 500 recent or ongoing initiatives have been identified, demonstrating a wide variety of approaches to support energy renovation of buildings⁶.

¹ "Capturing the Multiple Benefits of Energy Efficiency", IEA 2014, http://www.iea.org/bookshop/475-Capturing_the_Multiple_Benefits_of_Energy_Efficiency

² "Tackling Fuel Poverty in Europe: Recommendations Guide for Policy Makers", European Fuel Poverty and Energy Efficiency Project (EPEE), 2009. <http://www.nea.org.uk/Resources/NEA/Publications/Archive/Tackling%20fuel%20poverty%20in%20Europe.pdf>

³ <https://ec.europa.eu/energy/en/topics/energy-strategy/energy-security-strategy>

⁴ "The role of energy efficient buildings in the EU's future power system", Ecofys 2015, http://www.eurima.org/uploads/ModuleXTender/Publications/128/Ecofys_XII_Report_final_13_10_2015.pdf

⁵ Special Report: World Energy Investment Outlook, IEA, 2014 <http://www.iea.org/publications/freepublications/publication/WEO2014.pdf>

⁶ See for example:

(i) BPiE Data Hub : www.buildingsdata.eu

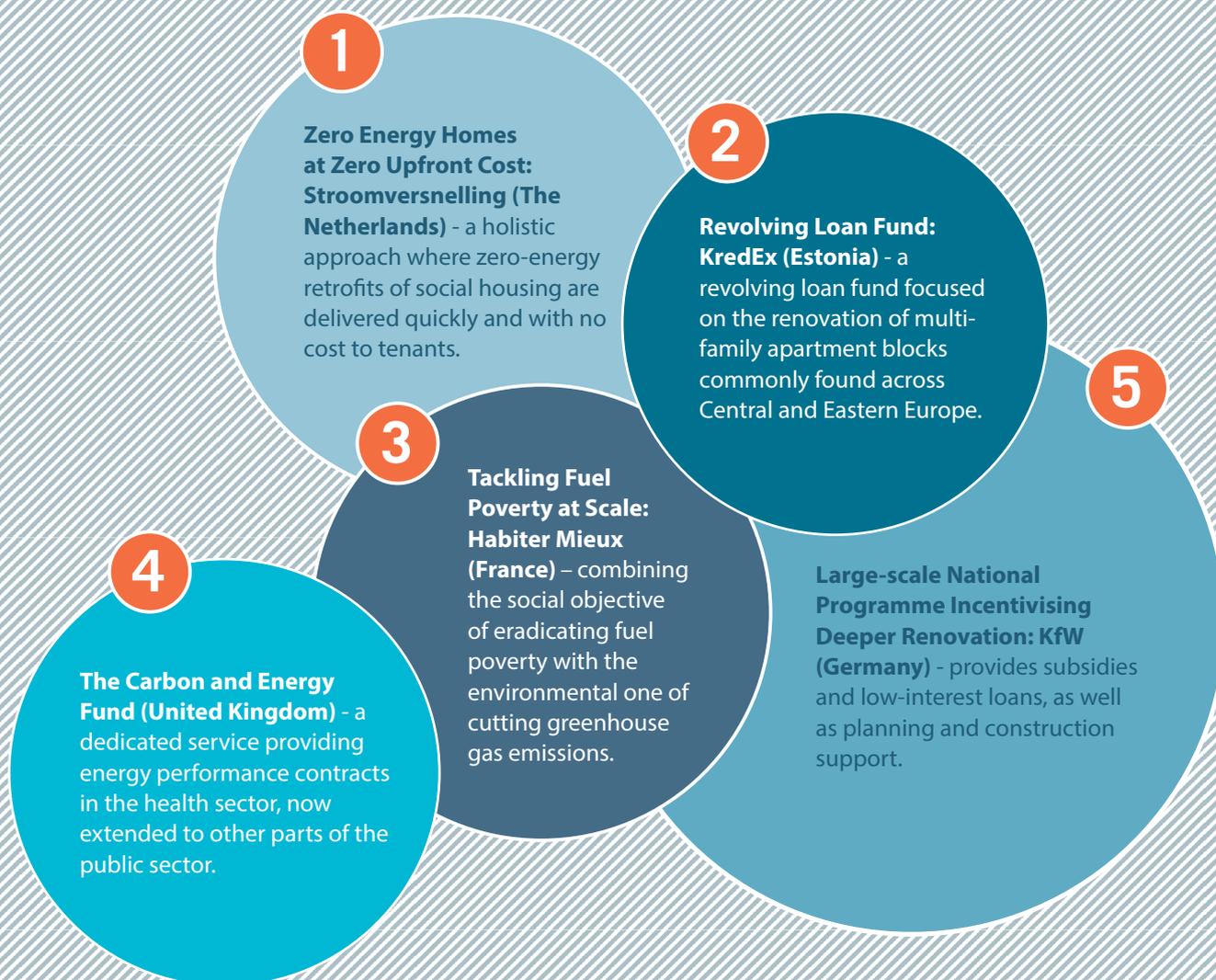
(ii) BuildUp: <http://www.buildup.eu/financing-schemes/35695>

(iii) MURE database: <http://www.measures-odyssey-mure.eu/>

(iv) IEA database: <http://www.iea.org/policiesandmeasures/energyefficiency/>

(v) "Energy Efficiency Policies In Buildings - The Use of Financial Instruments at Member State Level", BPiE (2012)

The five schemes described below were selected to illustrate a variety of approaches and solutions available to tackle the renovation challenge, whether in terms of scale, financing, addressing non-technical barriers, level of ambition or achievement of social objectives. They are:



To start off this overview, a Europe-wide summary of initiatives, making the improvement of the energy performance of buildings legally binding under certain specified conditions, is also included: mandatory renovation obligations (Various Locations).

These examples should serve as inspiration and motivation for policy makers, scheme administrators, investors, industry and indeed any stakeholder to use the experience outlined here to influence the renovation market in a positive way.

MANDATORY RENOVATION

Since 2010, the European legislation includes requirements for building renovation under specific conditions. The Energy Performance of Buildings Directive (EPBD) establishes minimum energy performance standards to be achieved whenever a building undergoes a major upgrade, while the Energy Efficiency Directive (EED) sets a 3% p.a. renovation

rate of the total floor area of buildings owned and occupied by the central government. However, some individual Member States, regions and cities have gone further, introducing various forms of progressive renovation requirements according to the following six “trigger points”:



WITHIN A SPECIFIC TIMEFRAME

In Germany, the Energy Saving Ordinance (EnEV 2014) contains retrofitting obligations which must be fulfilled by building owners within a specific timeframe, subject to a precondition of cost-effectiveness. These cover: insulation of top floor ceilings; insulation of hot water pipes and cooling distribution systems and replacement of old boilers. The French law “energy transition towards green growth” (August 2015) includes a renovation obligation for private residential building owners whose primary energy consumption exceeds 330 kWh/m²a (spanning energy performance classes F and G). These homeowners will be obliged to renovate their buildings by 2025⁷.



WHEN UNDERTAKING MAINTENANCE WORK ON A BUILDING

The French energy transition law also includes requirements to upgrade the energy performance of external façades and roofs when maintenance or improvement works are planned on the respective building components. Undertaking performance upgrades at the same time as maintenance work reduces overall costs and disruption. The aim is to achieve, to the greatest possible extent, the performance required for new buildings, taking due account of the technical and economic feasibility and any architectural limitations. Also, any work to make rooms or parts of a building habitable must include energy performance improvement measures.



WHEN RENTING A PROPERTY

From April 2018, private residential as well as non-residential properties in the United Kingdom with an energy rating in the lowest two classes, F and G, will need to be improved in order to be let out to tenants. Buildings for rental in the residential market in the Flanders Region of Belgium need to meet certain minimum requirements for insulation. Since January 2015, all roofs must meet a given threshold, while from 2020 on, this will also apply to floor insulation.



WHEN CHANGING A BOILER

In Baden-Württemberg, Germany, a boiler change triggers a requirement to cover 15% of heating demand with renewable energy, or implement alternative measures, including thermal insulation. Also, the creation of a deep renovation roadmap for an individual building can be taken into account. For non-residential buildings, it counts as full compliance, whereas for residential buildings it only counts for a share of 30%, so additional measures need to be implemented. A similar rule



applies for the Autonomous Province of Bolzano, Italy, where renewable energy sources must provide at least 25% of overall primary energy demand and 60% of hot water heating energy demand. Here also, the requirement can be met through energy efficiency measures.



AT CHANGE OF BUILDING USE

Denmark has established minimum energy requirements for building components in case of change of building use, which would result in significantly higher energy consumption. Examples are: conversion of an outbuilding to accommodation or conversion of usable roof space to accommodation.



IN CASE OF AN EXTENSION OF THE BUILDING SURFACE

A number of regions and cities in Italy have introduced mandatory building performance upgrades when the owner extends the building.

⁷ The decree introducing this requirement is currently in preparation.

⁸ “Investing in energy efficiency in Europe’s buildings - A view from the construction and real estate sectors”, The Economist Intelligence Unit, 2013

These examples show that there are many situations in which it is possible to require building owners to improve their building's energy performance. Looking forward, such obligations should be a much more significant feature within the policy landscape, as the evidence to date shows that reliance on purely voluntary measures does not result in the required level of building renovation, despite the sometimes very attractive financial support available to consumers. As EU countries need to engage more ambitiously in defining long-term trajectories to bring their entire stock to low energy levels, such regulatory signals would encourage the uptake of incentive schemes. Building owners themselves will

benefit, from lower running costs, but also from maintaining and increasing the value of their properties⁸.

With the experience gained through these regional or national initiatives, EU policy makers need to recognise the opportunity to introduce additional renovation obligations in the forthcoming reviews of the EPBD and EED. Notwithstanding efforts at the EU level, it is also incumbent on individual Member States and regional authorities to identify opportunities to require building performance upgrades under certain conditions.

The following opportunities for regional, national and EU authorities to introduce renovation obligations within their jurisdictions should in particular be fully evaluated:

- The 3% annual renovation requirement for central government buildings (EED, Article 5) should be extended to ALL public buildings.
- Over time, buildings in the lowest energy performance classes, which typically are difficult to heat and often have problems such as mould growth, condensation and poor indoor air quality, should be deemed unsuitable for occupation. Options for achieving this in different tenures (applicable to residential and non-residential buildings alike) include:
 - Rented buildings could become subject to progressively more demanding minimum energy performance requirements at time of change of occupancy or renewal of tenancy;
 - For privately owned buildings, sale of a property could become conditional on achieving a minimum energy performance level;
 - All buildings could set a minimum energy performance threshold target (varied according to building type) within a given timeframe.
- Social housing should be in the top quartile of energy performance ratings, in order to provide comfortable, affordable housing, particularly for households at risk of fuel poverty.
- Any extension, change of use or addition to existing buildings, or replacement of energy systems such as heating and cooling equipment, should be conditional on improving the overall energy performance.
- There should be progressive introduction of mandatory requirements at sale of a property, both residential and non-residential, so that the least efficient stock needs to be improved before it can be sold.
- Change of heating or cooling equipment, or undertaking maintenance work on the building should be accompanied by a requirement to improve building energy performance and an assessment of options for the introduction of renewable energy systems.

FIVE BEST PRACTICE RENOVATION CASE STUDIES



CASE STUDY 1- THE NETHERLANDS ZERO ENERGY HOMES AT ZERO UPFRONT COST - STROOMVERSNELLING

The social housing building stock in The Netherlands is relatively old and poorly insulated; around half of the buildings were constructed between the 50s and 70s. Within the framework of the country's Energy Agreement, social housing corporations accepted an objective to achieve an average energy efficiency label B by 2020. In order to help deliver this target, Stroomversnelling⁹ ("rapids") was developed by Energiesprong¹⁰ as a bottom-up approach supported by the Dutch Government, in which a zero energy concept for the existing social housing stock is stimulated in a faster and cheaper manner. The aim is to refurbish 111,000 rental houses to zero net energy¹¹ by 2020, to be paid for by energy cost savings over a 30-year period. Key features include:

- The amount tenants pay for housing costs (rent + energy) remains the same before and after renovation.
- The net zero energy-improvement of buildings is achieved within 10 days.
- An energy performance guarantee of 30 years is provided.
- A high degree of prefabrication using industrial processes is used.

Stroomversnelling represents a disruptive new business model for the renovation sector that involves a longer-term, holistic approach of delivering the goal of a zero energy renovation, packaged along with the financing arrangement as a fully integrated solution¹². The dwellings targeted by this project were built in the 50s, 60s and 70s and often have moisture, draft and noise problems coupled with high-energy bills. The project offers tenants better,

healthier and more comfortable homes with attractive façades, solar panels and smart metering, with new kitchens and bathrooms often included, thus improving the habitability of the home and also the look of the neighbourhood/district.

The biggest difference between Stroomversnelling renovations and a normal renovation is that almost everything is produced off-site in a factory, with only a small percentage of the work required in the on-site installation phase. Achieving a zero net energy renovation requires a holistic solution that (i) minimises the heat loss and energy consumption requirements of the building, (ii) produces the required energy in the most efficient manner, and (iii) generates renewable energy to meet the remaining (small) demand.

Technical innovation is coupled with the necessary financial solution to deliver zero energy renovations at no cost to the tenants. The financial engineering behind Stroomversnelling is based on funding of the upfront capital costs from the WSW social bank¹³ that has made available around €6.6bn to underwrite Government-backed loans to the housing associations¹⁴, generating a 5.25% financial return on investment (using the WSW social bank discount rate for corporate projects) over a 30-year period. The housing associations that provide the upfront costs buy a 30-year performance and maintenance guarantee by using a monthly fixed-term payment received from the resident. This "energy plan" replaces the energy bills previously paid to utilities, ensuring the tenant pays no more for the combined rent and energy bills than they did prior to renovation.

Success Factors and Replication Potential

Stroomversnelling is innovative because it developed a holistic solution to the typical problems encountered in conventional renovations – disruption, affordability, financing, achievement of full technical potential, and desirability from the perspective of the occupants as well as the owners (social housing providers). However, the solution developed in The Netherlands can readily be adopted in other EU Member States, wherever there is a significant social housing stock. Indeed, the potential for others to follow the Dutch model has already been recognised. The UK has recently established an offshoot "Energiesprong UK", bringing together housing providers, charities and construction companies to develop a similar approach¹⁵.

⁹ <http://www.stroomversnelling.net/>

¹⁰ <http://energiesprong.nl/>

¹¹ Net zero means the renovated dwelling will not consume more energy for heating, hot water, lights and appliances than it produces from installed renewable energy systems.

¹² <http://www.nef.org.uk/about-us/insights/could-an-energiesprong-approach-to-off-site-manufacturing-transform-the-dom>

¹³ The WSW is an independent institution enabling housing associations to obtain optimum financing for public sector real estate. (http://www.english.wsw.nl/uploads/_media/_315_Engels%20solide%20belegging.pdf)

¹⁴ For more information go to: <http://www.theguardian.com/environment/2014/oct/10/uk-looks-to-dutch-model-to-make-100000-homes-carbon-neutral-by-2020>

¹⁵ <http://nef.us6.list-manage2.com/track/click?u=907cd0a631b66ec99f2e6f8f0&id=55abadf413&e=f2a3811d8c>

CASE STUDY 2 - ESTONIA

REVOLVING LOAN LEVERAGING EU FUNDS - KREDEX



The housing stock in Estonia was mostly built prior to 1980, with little attention given to energy efficiency or energy performance requirements at the time. As a result, Estonian buildings are wasteful in terms of energy use, having an average heating energy demand of around 200-400 kWh/m² per annum¹⁶. This poor energy efficiency, combined with the fact that the majority of the population lives in Estonia's cities, with three out of four people residing in apartment blocks, led to the Estonian Government establishing the KredEx Foundation, Estonian Credit and Guarantee Fund in 2001, in order to provide support for improving the energy performance of the housing stock¹⁷. Originally based purely on grants, KredEx renovation finance changed in 2009 its structure to a revolving loan fund. KredEx manages the revolving fund, the first of its kind to use EU Structural Funds, to provide low-interest loans to housing associations and municipalities.

This funding mechanism provides the housing sector with an opportunity to reuse funds going into the scheme to further renovate the building stock. The revolving fund structure is based on:

- **KredEx** coordinating the operational aspects of the fund.
- The **Ministry of Economic Affairs and Communications** steering project progress.
- **Commercial banks** taking on lenders' risks through checking borrower eligibility, repaying the loan to the bank and checking compliance.
- **Housing associations** organising apartment owners, managing the project proposal, reporting to banks and collecting loan repayments.
- **Apartment owners** making a collective agreement to undertake the block renovation.

In 2010, KredEx also launched a grant scheme allowing eligible apartment buildings (constructed prior to 1993) to receive up to 35% of the renovation costs, to complement the revolving loan programme. These grants are used to cover the self-financing requirements of the loans. The technical aspects of each project will differ depending on the needs of the building and the results of the audit. Normally the improvement works will consist of insulation, new windows & doors, new heating & ventilating system, and installation of renewable energy devices.

The revolving fund has a total capital of €72M. The main financial aspects of the scheme are:

- Loans, administered by participating banks, can be used to finance measures that lead to an improvement in energy efficiency of at least 20% for buildings up to 2,000 m² or at least 30% improvement for larger buildings.
- The minimum loan is €6,400 per apartment, with a loan maturity period of up to 20 years.
- Average interest rates in 2012 were between 3.5% and 4%, fixed for 10 years.
- At least 15% of the total awarded loan must be co-financed by the final recipients.
- A KredEx grant can be combined with the loan. The grant rate depends on the expected energy savings, with higher grants given for projects with higher expected savings.

Success Factors and Replication Potential

Multi-family buildings are prevalent throughout Europe, accounting for over a third of all dwellings¹⁸. The approach taken in Estonia therefore has great replication potential. Indeed, a number of countries already have various types of financial support targeting this sector. The key to success is the establishment of a credible, independent body able to corral national or EU funds in support of building renovation, using the skills of the banking sector to distribute funds and collect loan repayments. The recycling of funds means the scheme can achieve a much greater level of energy saving than under a grant-only scheme. The other key ingredients for success are having a robust methodology for appraising applications, and securing the active participation of apartment owners and housing associations.

¹⁶ <http://www.kredex.ee/en/energy-efficiency/energiatohusus-korterelamus/>

¹⁷ http://www.buildup.eu/sites/default/files/content/mirja_adler_2011_11_29.ppt

¹⁸ "Europe's Buildings under the Microscope", BPIE, 2011. <http://www.bpie.eu>

CASE STUDY 3 - GERMANY

NATIONAL PROGRAMME INCENTIVISING DEEPER RENOVATION - KfW



On behalf of the German Government and the federal states, the KfW Development Bank¹⁹ provides subsidies and loans to encourage comprehensive (deep) energy renovation of buildings. The funding programmes target residential, municipal and social service buildings. KfW obtains its funding from the capital markets, where it benefits from an AAA credit rating and a 100% guarantee from the German Government.

Loans, which are made available through commercial banks, are encouraged by means of a repayment bonus higher than the grant option, and through subsidising the low interest loan (currently 0.75%²⁰) with a maturity of up to 30 years. This includes up to 5 repayment-free start-up years and a fixed interest period of up to 10 years. The loan can cover up to 100% of eligible costs, to a maximum of €100,000 per housing unit for a KfW Efficiency House, and up to €50,000 for individual measures. The programmes also offer grants for planning of integrated concepts and supervision of independent experts. Meanwhile, another KfW programme offers up to 50% of the costs for the supervision of construction, to a maximum of €4,000.

KfW illustrates a best practice approach to deliver a high leverage of private investment from public funds²¹. The annual public budget for KfW schemes targeting the building sector (including new buildings) was €1.8bn on average from 2012 to 2014. According to Germany's building renovation strategy²², the average leverage effect is 1:12. In other words, for every €1 of public support, private individuals and companies have invested €12.

Another positive effect is calculated for the job market, where SMEs benefit in particular. To determine the effects funding has on employment, the total investment costs of energy-saving modernisation measures have been used. For 2013, a total investment of €6.5bn resulted in an employment effect accounting for 79,000 person-years. From this total investment, around €1bn flow directly back to the state in the form of increased VAT from equipment sales.

The KfW scheme is noteworthy by virtue of its scale, reach, longevity and its gearing towards deep renovation. According to an analysis undertaken in 2012 by the French energy agency ADEME²³, the level of support equates to €16 per head of population, compared to €10 or less for support schemes in other Member States. As such, it provides by far the largest level of funding per capita of any renovation support scheme in the EU.

Another strength is its flexibility – adapting to changes in the Energy Saving Ordinance legislation, and market conditions. With support levels linked to energy performance, the scheme encourages consumers to achieve deeper renovation while acknowledging that not everyone will be in a position to do so.

Success Factors and Replication Potential

By virtue of the scale of support, the long-term nature of support for building renovation offered by KfW and its operation through high street banks, the scheme has achieved a high level of recognition. And, while there is a good level of uptake, there is certainly scope for this to increase yet further. Funding from public sources makes up only a small proportion of the total investment, while the resulting creation of jobs and sales of energy-saving equipment generates economic benefits far exceeding the Government's contribution. The gearing of support towards high levels of energy saving, coupled with a loan maturity period of up to 30 years, sends the right signals to investors, encouraging a focus on achieving deep renovation.

The scheme is also widely recognised throughout Europe and internationally as a best practice example of support for building renovation, and while it remains unique to Germany, many of its elements have been replicated in other countries. For example, the Czech "New Green Savings Programme" has been modelled to a significant degree according to the KfW principles²⁴.

¹⁹ Formerly "Kreditanstalt für Wiederaufbau", whose shareholders are: 80% federal republic, 20% federal states. www.kfw.de

²⁰ As of July 2015

²¹ Funds for interest rate subsidy and investment grants were provided by the national budget until 2010; in 2011 funds were provided by national budget as well as by the Energy and Climate Fund and since 2012 exclusively by the Energy and Climate Fund.

²² National renovation strategies are available at the Commission website: <http://ec.europa.eu/energy/en/topics/energy-efficiency-directive/buildings-under-eed>

²³ <http://www.ademe.fr/sites/default/files/assets/documents/efficacite-soutiens-publics-investissements-maitrise-energie-dans-ue-2012.pdf>

²⁴ <http://www.novazelenausporam.cz/en/>

CASE STUDY 4 - FRANCE

TACKLING FUEL POVERTY THROUGH ENERGY RENOVATION - HABITER MIEUX



With some 3.4 million French households in fuel poverty and three quarters of homes falling into the least efficient D-G energy ratings, Habiter Mieux (“live better”) was launched by the Government in January 2010 to tackle these two problems. The programme is supervised by ANAH, the national housing coordinator in charge of funding for thermal renovations, and managed at a sub-regional level within each “département”.

Over the period from 2010 to 2017, the €1.4bn programme aims to support 300,000 low-income households to achieve thermal renovation, improving residents’ housing, quality of life and purchasing power. Dwellings will receive a comprehensive renovation, including thermal insulation (roof, walls, windows) and replacement of heating and hot water equipment to improve the building efficiency. Technical operators provide personalised guidance on the types of renovation required and achievable.

In order for a household to be eligible to receive funding from ANAH, several conditions must be met, including:

- The housing must be over 15 years old on the date of submission.
- Income conditions must be under certain minimum thresholds for each region.

- The energy performance of the building must be improved by at least 25%.
- Professionals must perform the renovation work.

The scheme operator will provide recommendations to the beneficiary undertaking a renovation as to what kind of energy improvement is best suited to their household. A vast range of technical solutions is offered by the scheme, with the most popular measures being insulation of roofs and walls and change of heating systems, applied in two-thirds of homes since 2013. The average household’s energy saving is 41%, meaning the minimum energy saving of 25% has been considerably exceeded and the average cost incurred for these improvements is €17,000.

The Habiter Mieux programme is directly linked to a one-stop energy renovation shop, responsible for assisting all households in France experiencing fuel poverty who wish to embark on energy efficiency improvements.

Success Factors and Replication Potential

With growing recognition of the problem of fuel poverty across Europe, the need to target building renovation in the low income sector is essential. France has made the issue of national importance, with a presidential-level commitment to increase the renovation of residential buildings to 500,000 a year, at least half of which should be for households with modest financial means. This will contribute to the objective of cutting fuel poverty by 15% by 2020²⁵. This initiative forms part of a national strategy to achieve green growth through an energy transition to a lower-carbon future.

²⁵ LOI n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte (art 3)
<http://www.legifrance.gouv.fr/eli/loi/2015/8/17/2015-992/fo/texte>

CASE STUDY 5 - UK STREAMLINING PUBLIC BUILDING RENOVATION THROUGH EPC²⁶ - THE CARBON AND ENERGY FUND



The Carbon and Energy Fund (CEF)²⁷ was set up as a non-profit making venture and is a National Health Service (NHS) initiative available for any NHS locally operating organisation (known as an NHS Trust) wishing to improve the energy performance of its building(s). The CEF is the most widely used framework across the UK that assists the NHS in meeting its energy efficiency and carbon targets. The fund enables the installation of energy-saving measures and is available for any qualifying NHS Trust at no capital cost. This is significant, since a typical CEF project involves having an infrastructure upgrade or installation, requiring an average investment of around £3M (approx. €4M).

The main objective of the £300M (€400M) fund is therefore to finance and support projects within the NHS that ensure a certain level of carbon savings for a given level of investment. This is done through energy service performance contracts that guarantee an agreed level of energy and carbon savings. The contracts carry the costs of the design and procurement process as well as the up-front costs of installing energy-efficient improvements. The investment is repaid throughout the life of the contract.

In addition to providing finance, the CEF is also a vehicle to bring together specialist expertise in and around the NHS, acting as a central hub that ensures the Public Sector can benefit from knowledge gained from previous projects.

The CEF has been set up to simplify the procurement of energy efficiency projects, which halve procurement timescales, provide suitably skilled advisors and professional support throughout the process, and provide funding over the life of the contract, typically 15-25 years, with no upfront fees.

In short, the CEF brings together the required supply chain of advisors, contractors, lawyers and building stakeholders

with a source of long-term funding at preferential rates to realise large-scale energy-saving investments.

The type of energy infrastructure projects undertaken by the CEF model require substantial expertise and, considering that a hospital is open on a 24-hour, 365-days-a-year basis, people's lives can be at stake. It is possible for Trusts to undertake this kind of infrastructure upgrade on their own, however, it is both protracted and costly for the Trust as well as the bidding contractors. Current constraints on capital have made it increasingly hard for Trusts to invest in their core energy infrastructure. The CEF's procured framework reduces associated fees and procurement time for Trusts by over a year and the standardised Energy Saving Performance Contract (ESPC) provides guaranteed savings and risk transfer, with off-balance sheet benefits.

Alongside the anticipated energy and carbon savings, the CEF offers members and contractors networking opportunities and supports the sharing of experiences. The reassuring depth of experience offered by the CEF and its partners is one of the key advantages for Trusts wishing to embark on a secure energy upgrade. The framework of the CEF provides a protected and facilitated cradle-to-grave contract for energy improvements, with fewer administrative burdens and an energy guarantee.

So far, positive results have given the CEF framework more visibility as Trusts take the opportunity to use the system. The success of the first few phases of the funding model has led to the expansion of the fund into other parts of the public sector, such as education (receiving £10-20M per year). Furthermore, £25M of funding has been ring-fenced to target smaller-scale demand-side projects in Local Authorities.

Success Factors and Replication Potential

The Carbon and Energy Fund (CEF) is a holistic solution that provides a dedicated, expert resource with the sole objective of improving the energy performance of large public buildings. This service is offered throughout the duration of the project. Moreover, it enables large building complexes to be upgraded with no upfront capital cost, thereby addressing one of the main financial barriers of limited public budgets. Participants have the option of financing the measures themselves and can still benefit from the other services offered by CEF. In addition to that, it also streamlines and accelerates procurement procedures by pre-approving contracting companies (energy service companies). Finally, it provides a forum for exchange of views and expertise.

The take up of Energy Saving Performance Contracting varies considerably throughout Europe. At a time when many EU Member States are struggling with high level of public debt, the CEF model should act as an inspiration for any authority at national or regional level with a responsibility for vital public services, such as education and health, to provide a resource that can enable large, complex buildings to benefit from energy performance improvements without adversely affecting the public budget.

²⁶ Energy Performance Contracting
²⁷ <http://carbonandenergyfund.net/>

CONCLUSIONS & RECOMMENDATIONS

Improving the energy performance of existing buildings through deep renovation can bring about European energy security, job creation, fuel poverty alleviation, improved health and productivity as well as help fighting climate change. While many barriers to building renovation exist, there are many examples where these have been successfully overcome, as illustrated in the cases described above.

Our aim in this report has been to highlight the elements that make some of the best examples of renovation across Europe a success story in order to inspire and stimulate others to replicate these achievements and the years of experience and learning they embody. We also believe these initiatives should be studied closely by policy makers, so that the general principles behind successful schemes, whether voluntary or mandatory, can be reflected in future legislation.



STAKEHOLDER ENGAGEMENT

Convening all relevant participants in the renovation process from the first stages of developing a renovation scheme and then keeping them in the loop when deploying the scheme maximises buy-in and the overall success of the initiative.



PROVIDE SUPPORT

The ease with which some of these schemes can be applied is imperative to their uptake. Most building owners do not have the know-how to go through a procurement process, or the ability to determine the most appropriate measures to implement. Support bodies are needed to provide the necessary expertise and guidance to make the right energy-efficient choice.



POLITICAL COMMITMENT

Stakeholder engagement should be reinforced by the political commitment to design ambitious and efficient renovation schemes.



EFFICIENT IMPLEMENTATION

Opt for standardised procedures that can be readily replicated and repeated for the next building/district.



COMMUNICATION IS KEY

Develop strong campaigns to motivate stakeholders and provoke interest in the scheme.



ADAPT TO THE NEEDS OF APPLICANTS

Every building is different and every occupant (household, business, organisation) is linked to particular circumstances. Within a standardised approach, it is important to offer the flexibility to meet the specific needs of each situation and thus ensure the buy-in of applicants throughout the process.



OPERATING AT SCALE

Whether it's finance or the interest of construction companies, the larger the project, the greater the potential of attracting significant players and achieving the best economies of scale. Also, the more widely renovation solutions are deployed, the greater the chance for cost reductions through learning and increasing sales volumes.



MAKE FINANCING EASY

The most common barrier to renovation is access to finance due to the complexity of most schemes. These schemes illustrate a variety of ways in which the financial barrier is being overcome.



FOCUS ON QUALITY

Buildings are major assets, so renovation should be treated as an opportunity to increase the value of these assets. This can only be achieved through quality work, delivered by appropriately trained and skilled designers, project managers and craftsmen.



INCENTIVISE A HOLISTIC APPROACH AND DEEPER RENOVATION

Encourage more ambitious projects by offering higher levels of support depending on the final energy performance achieved. Or make deep renovation the only option.



The full report is available at www.bpie.eu/renovation-in-practice.html

Rue de la Science 23
1040 Brussels
Belgium

40 Bermondsey Street
London SE1 3UD
United Kingdom

Reinhardtstraße 50
10117 Berlin
Germany

Koszykowa, 59/3
00-660 Warsaw
Poland

Doamnei Street 17- 19
Bucharest
Romania

FOR MORE INFORMATION:

info@bpie.eu / www.bpie.eu / [@BPIE_eu](https://twitter.com/BPIE_eu) 