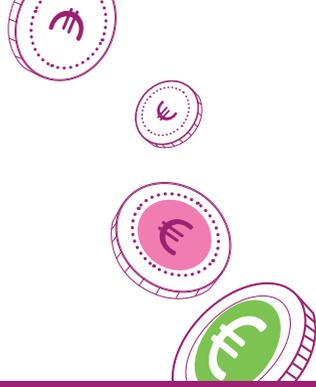
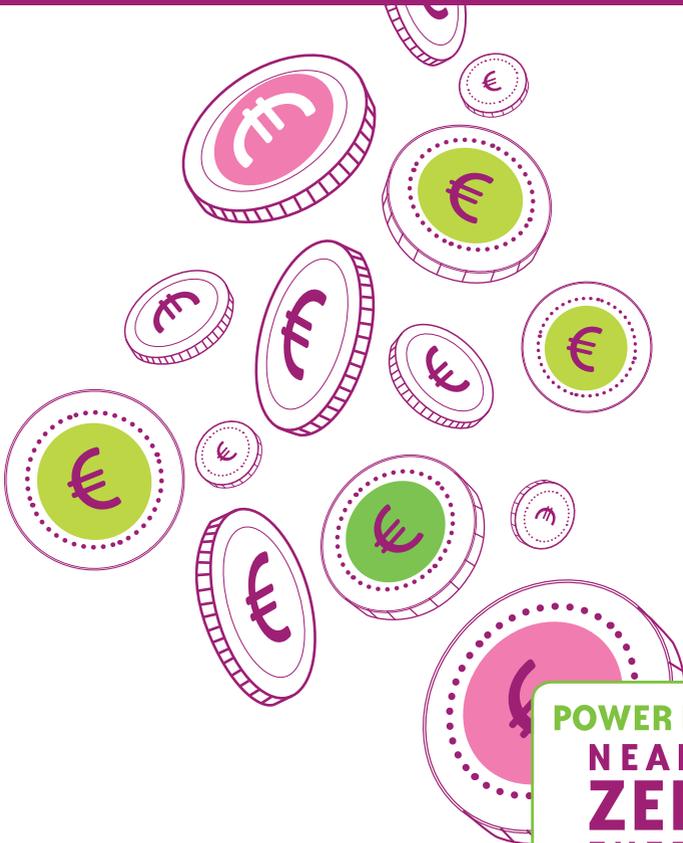




FINANCING  
NEARLY  
**ZERO**  
ENERGY  
HOUSING PROJECTS



# EXEMPLARY FINANCING MODELS FROM ACROSS THE EUROPEAN UNION



**POWER HOUSE**  
**NEARLY**  
**ZERO**  
**ENERGY**  
**CHALLENGE**



NATIONAL  
HOUSING  
FEDERATION

Supported by  
INTELLIGENT ENERGY  
EUROPE

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# INTRODUCTION

*To contribute to the reduction of energy consumption (primary or final energy demand) by 20% by 2020 at the EU level and in order to be ready for the energy and climate policies at the horizon 2030 and beyond, most social housing organisations have been working on developing ways to finance nearly Zero Energy Buildings.*

*Although many Member States now have in place or are working towards nearly Zero Energy Definitions which will be incorporated into building requirements for new build construction, a large proportion of the housing which will be being used in 2050 is already built – and therefore there is also a need to identify funding sources which are as low cost and accessible as possible to drive a low energy refurbishment programme for these as well.*

*In this report we will consider where we are now in terms of financing energy efficiency in buildings, where we need to get to, and what the next steps are in moving towards the final required target. This process will also include examination of ten different financial models currently being used by various member states, taken from a cross section of housing types and tenures, and with consideration of the benefits and limitations of each.*



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Social housing organisations have been very active over the last decade in investing in energy efficiency in buildings. The main reasons for this are that (I) they manage much greater housing stocks than a private landlord; (II) they have a much better decision-making capacity than condominiums (even though they may be limited by financial resources and local governance problems); (III) they operate with a social purpose – having an interest in the welfare of residents; and (IV) they manage in the long term (30-50 years) the housing they build, which is an incentive to reduce future operational and maintenance costs.

The progress made in the social housing sector is related not only to the level of energy performance attained, but also to the increasingly integrated approach to energy whereby, by cooperation between different actors, insulation works are carried out together with the increased use of renewable energy (for instance the installation on the top of buildings of solar panels to meet some of the heating needs, or connection to a district heating network the energy for which is generated by a biomass plant) and a better understanding of energy planning at the building and neighbourhood levels. Progress has also been made in evaluating the multiple benefits of investing in energy efficiency in social housing. Beyond the direct effect on energy performance of the dwellings, energy efficiency measures indeed help to save costs in

other policy areas. The impact of energy inefficient dwellings on health is one of the most documented so far. For instance the direct health impact of living in a cold home in terms of a higher risk of mortality and increased morbidity rates has been amply evidenced. Making homes, and in particular social housing, more energy efficient could therefore do much to save health costs for both individuals and public authorities. Some studies have managed to quantify the benefits in terms of saved costs for the public health services of investing in good quality, including energy efficient, social housing.

However, from a public policy point of view at the EU level, things are not going far enough and quickly enough if the huge potential of energy efficiency (in terms of jobs, a decrease in energy dependency and the improvement of living conditions) is to be fully exploited, in particular as a way of contributing to the economic recovery of the EU and its Member States. One of the main reasons is that the business environment for energy efficiency investments is not yet attractive enough for the majority of stakeholders. In the following we will examine what are the existing financing schemes for energy efficiency in buildings. Some are developed by the European Union and we will propose a way for the EU to give appropriate support to local actors.



## An overview of European Funding currently available for energy efficient new built and retrofit housing projects

The European Union has been supporting the improvement of the energy performance of buildings for many years with a range of financial support programmes. The table below gives an overview of the main instruments and available funding:

In the following we will give some elements about the future funding programmes 2014-2020:

### COHESION POLICY FUNDING (EUROPEAN STRUCTURAL AND INVESTMENT FUNDS)

For the 2014-2020 programming period, there are at least 4 main elements for energy efficiency in housing:

**1** The European Regional Development Fund imposes **obligatory minimum percentages** that must be invested in sustainable energy (Thematic Objective n°4), including energy efficiency: at least 12% for less developed regions, at least 15% for transition regions and at least 20% for more developed regions;

**2** The **quantity of funding allocated** for Sustainable Energy and Energy Efficiency is expected to **more than double from the last funding period, to an estimated minimum of EUR 23bn**;

**3** The **scope of eligibility for investments in energy efficiency in buildings has been**

**expanded** beyond the ERDF to encourage investments also from the Cohesion Fund (where the housing sector was previously excluded) and the European Social Fund (supporting the up skilling of the labour force for green jobs). This expanded scope opens up the possibility for Managing Authorities to design a **Multi-Fund Operational Programme around Building Renovations**, which can combine the funding opportunities from all 3 Funds to **maximise impact on the ground**;

**4** A specific “off-the-shelf” financial instrument for buildings renovations has been developed: the **Renovation Loan**. It aims to combine public and private resources to finance building owners at preferential conditions, leading to a boost in the renovation market.

### RESEARCH FUNDING

Under the previous EU Research & Development Framework Programme (FP7 2007- 2013), about EUR 2.3 billion were dedicated to energy-related research. Most of this budget is used to support research, technological development and demonstration projects through the annual Calls for Proposals.

Under the new Research and Innovation Programme Horizon 2020, the Commission proposes to allocate 6.5 bn to the ‘Energy challenge on secure, clean and efficient energy’ for research, development and deployment of Horizon 2020, including for market uptake of energy innovations”.

In particular during 2014 and 2015 the following topics will be addressed with the following budget.

### Indicative budgets for the calls for proposals

CALLS	2014 (M€)	2015 (M€)
<b>Energy Efficiency</b>	97,5	98,15
<b>Smart Cities and Communities</b>	92,32	108,18
<b>Competitive Low-Carbon Energy</b>	359,1	372,33
<b>SMEs and Fast Track to Innovation</b>	33,95	37,26
<i>Part B = other actions</i>	75	61
<b>Euratom Fission</b>	48,3	39,6
<i>Part B = other actions</i>	0,3	15,0

Source: European Commission Horizon 2020 Energy Info Day, December 5<sup>th</sup>

## FUNDING FROM INTERNATIONAL FINANCIAL INSTITUTIONS

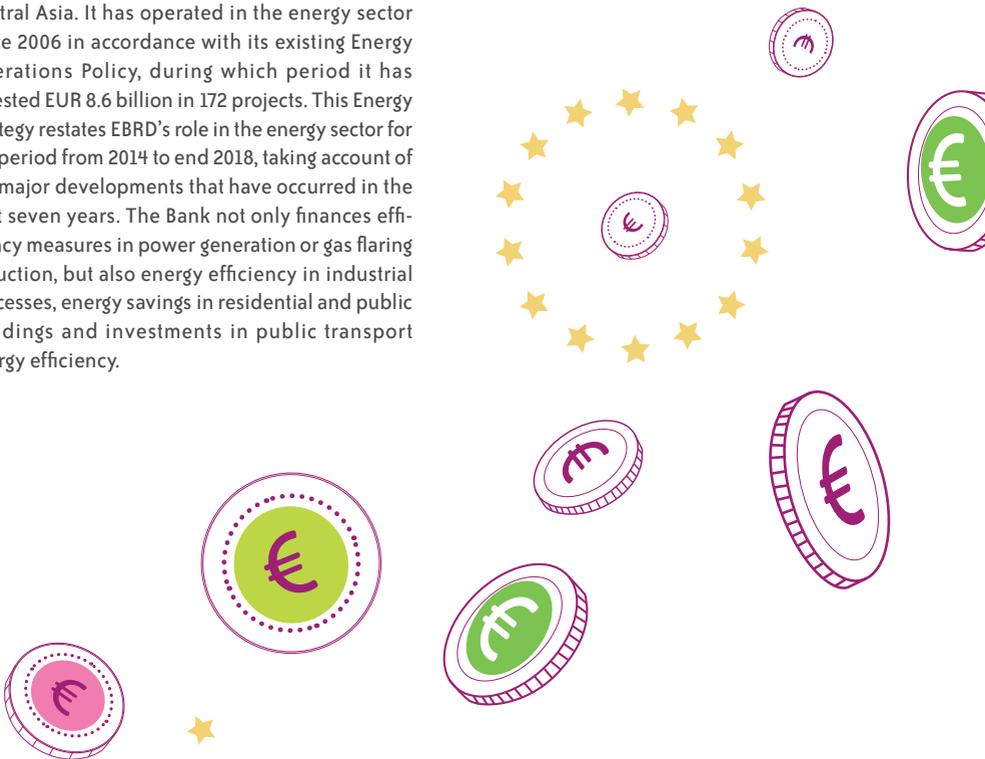
**The European Investment Bank (EIB)** undertakes lending of €85bn allocated annually to energy efficiency – and these loans fund models such as The Housing Finance Corporation, discussed below.

**ELENA** (European Local Energy Assistance Facility) is a funding mechanism designed to help cities/regions achieve energy efficiency potential by providing technical assistance for structuring and implementing projects. This aims to allow the establishment of a sound business proposal which should then allow access to finance from local banks or other sources such as the EIB. ELENA is funded by Intelligent Energy Europe, and covers up to 90% of costs.

**The European Bank for Reconstruction and Development (EBRD)** is active Eastern Europe and Central Asia. It has operated in the energy sector since 2006 in accordance with its existing Energy Operations Policy, during which period it has invested EUR 8.6 billion in 172 projects. This Energy Strategy restates EBRD's role in the energy sector for the period from 2014 to end 2018, taking account of the major developments that have occurred in the past seven years. The Bank not only finances efficiency measures in power generation or gas flaring reduction, but also energy efficiency in industrial processes, energy savings in residential and public buildings and investments in public transport energy efficiency.

## EUROPEAN ENERGY EFFICIENCY FUND

The European Energy Efficiency Fund (EEE-F) was established in 2011 with a volume of €265 million, with funding coming from the European Union, the European Investment Bank, the Italian Cassa dei Depositi e Prestiti and Deutsche Bank. The fund provides debt, equity and guarantee instruments, as well as technical assistance grants to support project development. Around 70% of the funding is intended for energy efficiency projects, with the remainder allocated to renewable energy and clean urban transport. The fund aims at bringing already well-proven technologies to the mainstream, and at strengthening the European ESCO market and the use of energy performance contracting. At present there is one project signed with 39 more projects in the pipeline. The effectiveness of the fund will be subject to evaluation in 2013.





\* iStockphoto

The Energy Efficiency Directive (EED) approved in 2011, obliges Member States to propose a strategy to mobilise investment in energy efficiency in buildings to underpin renovation roadmaps (article 4) by April 2014 and to introduce energy efficiency obligation schemes (article 7). Depending on how these are transposed, they will generate additional funding streams for housing retrofit either directly or through the financing of a guarantee fund for energy performance contracting.

The article 20 gives more specifications on the fund but uses the word 'may' leaving the choice for Member States to set up an Energy Efficiency National Fund to support national energy efficiency initiatives. It states that Members States may legislate so that obligated parties in article 7 "*can fulfil their obligations by contributing annually to the Energy Efficiency National Fund an amount equal to the investments required to achieve those obligations*".

## EED TRANSPOSITION & IMPLEMENTATION – KEY DATES

30 APRIL 2013

- Indicative national energy targets (and report every year onwards on progress / main measures)

5 DECEMBER 2013

- Notification of plans on Article 7 implementation (energy efficiency obligations and/or policy)

30 APRIL 2014

- National Energy Efficiency Action Plans (and every three years onwards)
- Long-term strategies for renovation of national building stock

5 JUNE 2014

- **Transposition deadline !!! (for most of the measures)**

31 DECEMBER 2014

- Billing information must be accurate and based on actual consumption

30 JUNE 2015

- Assessment of potential for improving energy efficiency in gas and electricity infrastructure

5 DECEMBER 2015

- Large enterprises should have undertaken energy audits (and repeats them every four years)

31 DECEMBER 2015

- Assessment of potential for district heating and cogeneration

Member states currently have a range of financial models in place for funding both energy efficient new build construction and energy efficient retrofitting of existing homes, at local, regional or national levels. Mechanisms for these vary and include grants, loans, subsidies and pay as you save schemes and range from options available to individual householders through to large whole apartment building schemes. The application and relevance of these models to social housing organisations varies widely, with some providing great benefit and others presenting some barriers specific to the industry.

Broadly speaking, there are four different types of financing model which are used for funding energy efficient building and refurbishment in Europe:

**Enhanced loans** – these are loans which have been supported with low interest or interest free periods as part of the loan. These are usually structured so that the Government provides some funding to banks, who in turn lower their interest rates accordingly.

**Pay as you save (PAYS)** – A third party pays the upfront cost of refurbishment, which is then recouped gradually through a charge added to the utility bill. This is often combined with the enhanced loan approach, allowing tenants to access low rate funding for the upfront costs initially too.

**Guarantee programmes** – this model helps to bring financial institutions on board by spreading the credit risk of energy efficiency schemes, making them more attractive to both providers and customers.

**Energy service companies (ESCO's)** – works carried out by energy providers, where the energy savings created generate revenues which can be used to fund installation of required measures. This is usually done through use of an Energy Performance Contract (EPC), which will stipulate a level of payback as a percentage of energy savings achieved.

Examples of these models, singularly or in combination, can be seen in various member states. In order to discover what works well, and what lessons can be learnt from these different financing mechanisms, ten exemplary models drawn from across a number of member states are discussed and analysed in the next section, with consideration given to the following questions:

- **What is the scheme for?**
- **How is it funded?**
- **What is the amount of funding available?**
- **How does it work?**
- **How long has it been running?**
- **What results have been achieved so far?**
- **What lessons can be learnt?**
- **How easily could it be replicated in other countries (and how)?**
- **Does it work on its own or does it need other funding streams/support**
- **What environmental standard has it achieved – i.e. how far along the road to nearly zero**

And case study example(s) are included if available.

The models are as follows:

1. Bielefeld Klimabonus – Germany
2. Energy Company Obligation – U.K.
3. FRESH Project Energy Performance Contracting – France, U.K., Italy and Bulgaria
4. Green Deal – U.K.
5. KfW – GdW Germany
6. KredEx – Estonia
7. 'More with less': guarantee funds – the Netherlands
8. THFC – U.K.
9. White Certificates – France
10. Better Energy Warmer Homes



## MODELS IN MORE DETAIL

### 1 Bielefeld Klimabonus Germany

#### WHAT IS THE SCHEME FOR?

Bielefeld is a city of 320,000 people, located in North-West Germany. In Bielefeld, around 90% of the 156,000 homes were built prior to 1990, and most have insufficient insulation of the façade, ceilings and attic. Additionally, the heating and hot water systems are generally less efficient than modern equivalents.

The Bielefeld Klimabonus was introduced to save energy, and also reduce social hardship by ensuring tenants were not priced out of their homes following an energy retrofit – which in Germany leads to an increase in rent. Increases of €3.00/m<sup>2</sup>/month following a retrofit were not uncommon, and in many cases led to unachievably high rent levels for existing tenants.

#### HOW IS IT FUNDED?

The Klimabonus operates using a pay-as-you-save model, whereby the money spent on the energy retrofit is gradually recouped through payment of a higher rental amount once the work is completed.

#### HOW DOES IT WORK?

The Klimabonus was developed in collaboration between a local housing association and the municipality. It is designed around the principle that the lower the level of energy consumption for a property, the higher the rent which can be charged. This energy consumption must be documented and validated with an energy performance certificate. The result should be that the resident is no worse off, as the increased rental level is offset by the decrease in energy bills.

#### Rental levels are increased according to the following scale:

If <75kWh/m<sup>2</sup>/year - €5.29/m<sup>2</sup>/month

If <175kWh/m<sup>2</sup>/year - €5.14/m<sup>2</sup>/month

#### HOW LONG HAS IT BEEN RUNNING?

The Bielefeld Klimabonus was introduced by the Social and Health Committee of the Bielefeld City Council in 2007, to support the work they were doing in actively addressing the need to increase energy efficiency in all areas of life within the city.

#### WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?

The scheme has so far been a success, with 16% of housing in Bielefeld now having improved energy consumption. The scheme has had economic and social benefits, as residents are able to live in better quality homes in a more stable community – there is less pressure on vulnerable neighbourhoods for relocation due to unaffordable rental levels. The City Council also has the benefit of making savings in the long term, as in Germany they are the body responsible for meeting the reasonable accommodation and heating costs of residents who are unemployed.

#### HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?

This model would be difficult to replicate in countries which do not allow an increase in rental levels following retrofit, as the scheme relies on this cost-neutrality (where savings made are more than or equivalent to the increase in rent) in order to be successful.

#### DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT?

Because the cost of the retrofit can only be recouped once the energy savings have been implemented and achieved, the initial funding for the work must be sourced from elsewhere.

## WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?

Although the scheme may not allow for achievement of nearly-zero, there is an incentive for housing associations to carry out the highest possible level of cost-effective retrofit, due to the sliding scale of rent increase which can be charged dependent on the evidenced energy savings resulting from the work.



istockphoto

## 2 Energy Company Obligation (ECO) U.K.

### WHAT IS IT FOR?

This is a new U.K. programme designed to reduce energy consumption by providing funding for specific home improvements in the form of a grant. It can be used on its own, or to complement the Green Deal (see example 4, below). The model has been created to allow efficient mobilisation of a large amount of funding.

#### Three distinct areas of funding are identified:

- The Carbon Emissions Reduction Obligation (CERO) – this aims to target hard to treat homes which require measures that the Green Deal would not be able to fully fund. Examples include solid wall insulation or hard to treat cavity wall insulation. This is currently subject to change, following a consultation which is underway.
- The Community Obligation (CO) – this operates to allow installation of insulation measures for areas of low income, and provision of connection to domestic district heating systems. At least 15% of each suppliers obligation must be targeted at low income and vulnerable households living in rural areas (also subject to change following consultation).
- The Home Heating Cost Reduction Obligation (HHCRO) – this requires energy suppliers to provide measures which improve ability to heat homes for vulnerable and low income households. There is a tenure restriction on this area, which means that it is not accessible to social housing providers.

### HOW IS IT FUNDED?

Funding is achieved through use of an Energy Company Obligation, which requires energy suppliers to help improve the energy efficiency of buildings for domestic energy customers (this is not limited to individual customers of each supplier, but is a holistic scheme). This is done through use of a levy on all energy bills, and is therefore a regressive scheme as those with a lower income end up paying proportionally more than others with a higher income – meaning that it is important to support lower income and vulnerable households to access and take advantage of the scheme wherever possible.

### WHAT IS THE AMOUNT OF FUNDING AVAILABLE?

The initial level of funding was an estimated £1.3billion per year, split into three separate areas as described above. £350million is for 'fuel poor' households and can be applied for by private households only. Social housing organisations are able to access the other two pots, £190million for carbon saving communities, and £760million for hard to treat properties. These amounts are all estimates, calculated against the total amount of carbon savings which energy providers are required to achieve and the total amount could end up being more or less than this. However, the scheme is proposed to be changed, with a 1/3 cut to the amount of funding available for CERO and an extension of CO and HHCRO until 2017. The focus is also proposed to be altered, with less emphasis on solid wall insulation for example. This will have a big impact on the social housing sector,

with the cuts in funding and lower availability of solid wall insulation meaning that fewer schemes are able to go ahead.

### **HOW DOES IT WORK?**

Social housing organisations can apply for ECO funding using either a brokerage system, which allows the energy suppliers to bid for proposed improvement works; through use of a third party; or using a bilateral agreement which sets out a deal to provide a certain saving over a set period, for example. Currently bilateral agreements are more likely to be used by social housing organisations, as undertaking the brokerage system requires an organisation to be registered as a Green Deal provider and this is something that most social housing organisations are not currently signed up to.

### **HOW LONG HAS IT BEEN RUNNING?**

ECO began in January 2013, and has been running for nine months. Initially, the scheme was intended to run until March 2015 – however this has recently been extended to 2017. ECO replaces the previous schemes of CERT (Carbon Emissions Reduction Target) and CESP (Community Energy Saving Programme) which were also run using a similar funding method on a smaller scale.

### **WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?**

Since the scheme began, preliminary figures indicate that a total of 149,681 measures have been installed using ECO, up until end of June 2013. The majority of these were loft insulation, cavity wall insulation (68% for hard to treat properties) and boiler replacements. 4,700 of the measures were solid wall insulation with virtually all being external.

### **WHAT LESSONS CAN BE LEARNT?**

One of the main lessons learnt from CERT and CESP was the importance of a simple application method – the complicated process involved for obtaining funding previously resulted in large amounts of funding not being accessed until the very end of the scheme. The Government is currently looking at ECO 1.2, and there is a hope that they will further revise the application process so that it is more simplistic.

With ECO being a new scheme, housing associations are keen to get the best deal. Currently there is a lot of price variation, so many are waiting for more price certainty before committing to agreements. In addition to this, long term certainty is a big issue, with the final details of ECO 1.2 not currently confirmed.

Finally, cherry picking of schemes is a concern. Everyone wants low cost measures in their packages – such as boiler replacements and easy to fill cavities – to deliver maximum savings. However, if this continues, eventually all that is left will be schemes that can't offer competitively blended mechanisms.

### **HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?**

Article 7 of the Energy Efficiency Directive requires all member states to set up an Energy Company Obligation scheme, which means that many similar schemes will start to be introduced in the coming months and years. The exact application of this will vary from country to country, as the number of energy providers and the housing stock varies considerably between member states.

### **DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT?**

ECO can work as a standalone financing option, however it can also be used to supplement other funding if appropriate to achieve better energy reduction outcomes.

### **WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?**

It is unlikely that ECO will lead to nearly Zero, however there is potential for a significant energy saving for many properties which are currently extremely inefficient.

## Case study example

### GreenSquare – ECO funding for external insulation in Wiltshire



**BEFORE**



**AFTER**

ECO has provided 100% funding for GreenSquare to install external solid wall insulation to 63 Cornish type one precast reinforced concrete houses across Wiltshire, using a silicone-based render system. These houses were built in the 1950's to address the post war housing shortage, and have no external insulation which causes a lot of heat loss through the walls – currently heat lost is  $3.14\text{W}/\text{m}^2\text{K}$ . The insulation has been predicted to reduce heat loss to just  $0.30/\text{m}^2\text{K}$ , which should make the houses much more energy efficient and cheaper to heat.

The houses are heated using oil and coal, and GreenSquare hope that these insulation measures should reduce the amount of fuel required per year significantly.



## FRESH Project Energy Performance Contracting

 France,  U.K.,  Italy &  Bulgaria

### WHAT IS THE SCHEME FOR?

The FRESH Project (Financing energy Refurbishment for Social Housing – is a European co-operation project which uses Energy Performance Contracts (EPC) to invest in a comprehensive refurbishment which includes insulating buildings and renewing their heating systems.

### HOW IS IT FUNDED?

The project was funded by an Energy Services Company (ESCO) which provided the money up front for the refurbishment, and is then repaid using the energy efficiency savings generated by the work.

### HOW DOES IT WORK?

FRESH – Financing energy Refurbishment for Social Housing – was a project that aimed at demonstrating to Social Housing Operators that Energy Performance Contract (EPC) can be used for low energy refurbishment on a large scale. The main objective of this project was to test EPC in 4 countries (France, UK, Italy and Bulgaria) and to develop generic tools for the broader dissemination of EPC in social housings.

### HOW LONG HAS IT BEEN RUNNING?

This is a 3 year project, which began in June 2009 and concluded in May 2012.

### WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?

The project published some of the first handbooks on EPC in Social Housing, which allowed clarification of the definition and scope of the market. This followed on from the study of tested implementation of EPC in the social housing sector across three different member states (UK, France and Italy) giving access to data which was previously unavailable.

### WHAT LESSONS CAN BE LEARNT?

It is difficult to strictly apply the most common EPC model in the Social Housing sector, due to the specific way it operates. The model requires country dependent adaptation in order to be successful.

The major problem seen by Social Housing organisations in this respect is that often there is no provision to allow recouping of energy savings from tenants.

The legal framework can also cause barriers, including problematic procedures for awarding EPC contracts in the public sector, and integration into the contractual framework which already exists for the organisation.

The fact that energy retrofitting usually leads to a longer payback period than other major programmes of works, and that it has a lower return of equity can also be an issue.

► [http://eaci-projects.eu/iee/page/Page.jsp?op=project\\_detail&prid=1869](http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1869)

### HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?

The project was undertaken in four European countries – France, Italy, Bulgaria and the U.K. – which suggests that it could be modified and replicated to work efficiently in countries across Europe. Each country adapted the model to suit their own particular national framework.

### DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT?

In order for this model to work on a large scale, access to additional funding to set up a Third Party Financing Operator (TFPO) would allow a far more comprehensive model of refurbishment to be undertaken, giving smaller organisations the opportunity to set up a contract which would otherwise be unattainable. This funding could be obtained either privately, or through use of JESSICA/structural funds.

### WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?

► <http://www.fresh-project.eu/>  
 ► [http://eaci-projects.eu/iee/page/Page.jsp?op=project\\_detail&prid=1869&side=downloadablefiles](http://eaci-projects.eu/iee/page/Page.jsp?op=project_detail&prid=1869&side=downloadablefiles)

**WHAT IS IT FOR?**

The Green Deal is a pay as you save mechanism and a market mechanism too. It involves no government finance, and is purely

reliant on stacking up financially on its own merit. It is aimed at allowing residents the opportunity to refurbish their property to make it more energy efficient, and is available to all residents regardless of tenure type (although tenants must have consent from their landlord - and landlords must have consent from their tenants - before taking part in the scheme).

**HOW IS IT FUNDED?**

The Green Deal is funded by individuals using PAYS mechanisms, which is supported by private finance allowing providers to pay upfront costs which are gradually paid back over time. It is therefore ultimately paid for by consumers. The private finance behind the initial capital is acquired through a consortia of investors including banks, local authorities, consumer and business groups. An industry-led consortium has been created – the Green Deal Finance Company – which is expected to provide the majority of all loans.

**WHAT IS THE AMOUNT OF FUNDING AVAILABLE?**

Funding available to individual households is limited by the Golden Rule, which states that the total funding amount taken out for energy efficiency measures must not exceed the amount of saving which will be generated by these measures, spread over a specified number of years.

**HOW DOES IT WORK?**

The dwelling is assessed by a Green Deal Assessor to identify potential energy efficiency measures from a prescribed list. These measures include:

- **Heating, ventilation and air conditioning**
- **Building fabric measures such as insulation, draught proofing and glazing**
- **Lighting**
- **Water heating**
- **Microgeneration**

Once the potential measures have been assessed and the costs calculated, they are then weighed against the predicted energy savings which would be achieved to give a final list of measures which would fit within the criteria of the Golden Rule.

**HOW LONG HAS IT BEEN RUNNING?**

The Green Deal began in October 2012 and is therefore only in its early stages.

**WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?**

Currently 85,177 Green Deal assessments have been undertaken (as of September 2013), with 57 Green Deals fully completed.

**WHAT LESSONS CAN BE LEARNT?**

Early analysis indicates that having a robust, well advertised system in place is paramount. Initial take up of the scheme has so far been fairly low, with a lack of cohesion between each stage of the process and only a small number of providers able to offer the total package. There is also a fairly low level of public awareness of the Green Deal. This is something that should improve as the scheme progresses, however anticipation of these issues in future models could vastly increase public confidence and interest.

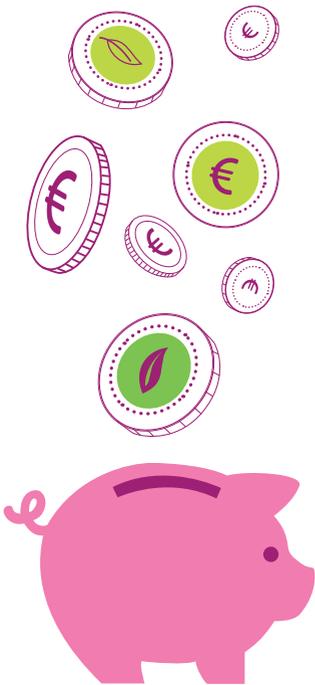
The interest rates for loans are also an issue, with current rates offered often being higher than other non-Green Deal options available – although the Green Deal Finance Company puts forward the point that their loans are currently the only financial product available that offers a fixed rate of interest for more than 10 years. The Government is currently looking into options for subsidising finance in order to cut interest rates to a lower level.

There are particular issues in relation to social housing. Firstly, measures undertaken using the Green Deal must fit within the Golden Rule, as detailed previously. However, since the most cost effective energy efficiency measures have generally already been undertaken (loft and wall insulation, new boilers etc) this leaves fewer cost effective measures which could potentially be undertaken and as such

for many households the Green Deal alone may not provide sufficient funding.

Secondly, the Green Deal is a debt model of funding, which requires households to take on a loan and pay it back gradually. Generally speaking housing associations are not keen on using this method of funding.

Finally, the model relies on residents achieving the predicted levels of savings in order to make it affordable – yet due to the rebound effect (where the home becomes more energy efficient and therefore residents will then wish to have their homes warmer) and non-standardising heating patterns (for example where residents are at home all day and need to heat their houses for longer periods than average) the predicted savings may not end up being the actual savings. This needs to be considered carefully when assessing any potential improvements.



### HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES?

Replication of the model is largely dependent on property types and tenure, and current measures already in place. The model may be problematic in divided ownership, for example – due to the consent required from both residents and landlords before the Green Deal can be utilised. There is also a potential issue for apartments rather than individual properties, for which many measures would need to be carried out on a whole block basis in order to be effective. The model also relies on an effective payback method (in this case done through the electricity bill – although other similar schemes exist which use alternatives, for example implementation of an elevated rent level). There is also an initial need for a large amount of funding to pay for measures which can withstand a long loan payback period. A robust training programme and supply chain is also required.

In essence, other countries wishing to establish a similar scheme will need to ensure that the system is cost effective, has a sufficient level of private finance to support initial set up and borrowing; and additionally set up a complementary white certificate scheme which can sit alongside and top-up any shortfalls for more expensive, deeper renovation works.

### DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT?

The Green Deal works as a standalone funding mechanism for smaller more cost effective measures, but not for hard to treat properties or those in fuel poverty – and in order to achieve deep-level retrofitting additional funding will also be required.

### WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?

Whilst the Green Deal should achieve a reduction in energy emissions, it is unlikely that measures which meet the Golden Rule would achieve nearly zero. Results will vary according to property archetype and age, and existing energy status.

## Case study example

### Gentoo – energy saving bundle

Gentoo is responsible for 70,000 customers in 29,200 homes in the U.K..

In 2008 they delivered a self funded retrofit programme known as 'Retrofit Reality' to 139 homes. Following this, in 2009 they took part in the Government supported Pay As You Save (PAYS) scheme which allowed access to a £600,000 interest free loan from the Department of Energy and Climate Change (DECC) to deliver energy efficiency improvement packages across 119 homes. This loan was used in conjunction with Community Energy Saving Project (CESP) funding – the precursor to ECO – provided by EDF Energy to deliver upgrades such as A-rated boilers, double glazed windows and external wall insulation to nearly 400 homes. In addition, funding provided by Gentoo themselves led to an improvement plan encompassing 700 homes. The success of these programmes and experience gained led to Gentoo designing a large scale Green Deal pilot project – The Energy Saving Bundle – which encompassed 1200 homes across Sunderland.

The Energy Saving Bundle was supported by the Building Research Establishment (BRE), DECC and British Gas; and additional CESP funding was secured to subsidise the works and reduce the amount that the customer was required to pay back.

Measures available as part of the Bundle included free replacement of G rated boilers under the Gentoo investment plan, plus additional optional measures using the Energy Saving Bundle - installation of double glazed windows, and fitting of solar PV for suitable properties.

Data was collected about energy performance

of the properties and customer attitudes and awareness from the outset of the project. 80% of customers consulted agreed to take part in the scheme, and the average charge per property has worked out as £1.06 per week. Repayments are made via British Gas on the customer's energy bill, or through Gentoo rent accounts. 91% of customers are up to date with payments. Preliminary findings suggest that the health outcomes are positive, with lower levels of Gentoo customers accessing primary and emergency healthcare on a frequent basis than other social housing customers. Some initial evidence suggests that the RdSAP rating of the homes which took part in the scheme has improved, although customers are not necessarily seeing a saving in the energy bills (which may be due to the rebound effect). In-depth analysis of the results is currently underway.

Lessons learnt include:

The need for successful suitable property identification and in depth surveying as early in the process as possible.

Awareness of the time involved for paperwork – amending tenancy agreements, drawing up legal paperwork, applying to connect solar PV systems to the grid etc.

Benefits of a community based approach, where large numbers of properties in close proximity are all targeted at the same time.

Consideration needs to be given to the impact of changes in energy tariffs on financial viability.

**Full case study report:**

► <http://bit.ly/W1XW9g>

**WHAT IS IT FOR?**

The object of the scheme is to promote funding of energy efficiency in buildings on a voluntary basis, and to support

building owners who are exceeding the level of required German energy saving ordinance. This is done through brokering low interest loans and providing performance related grants, in addition to requiring expert advice and installation is undertaken to ensure that work is carried out to a whole standard, and takes a ‘whole house’ approach.

**HOW IS IT FUNDED?**

The majority of funding is sourced from the capital market, with guarantees provided by the Federal Government. This guarantee allows funding to be sourced at a low interest rate, which can then be used for large, long maturity loans. In addition, Federal funds are also allocated to allow for provision of subsidies and further reduction of interest rates. The amount of Federal funding provided each year varies according to the budget.

**WHAT IS THE AMOUNT OF FUNDING AVAILABLE?**

The amount varies dependent on the level of efficiency achieved. For refurbishment, a grant of between € 3750 and € 15000 is available, and a loan of up to € 75000 is also possible. For energy efficient construction it is possible to apply for a loan of up to € 50000.

In 2010 0.8bn was allocated to KfW from Federal funds specifically for energy efficiency programmes.

**HOW DOES IT WORK?**

Long term fixed rate low interest loans are offered to support and incentivise energy efficiency work as part of building refurbishment, or to allow higher levels of energy efficiency to be achieved in new build. The loans are linked to subsidies which relate to the level of energy efficiency achieved – the higher the level, the larger the amount of subsidy which can be obtained (calculated as a percentage of the total loan which is not required to be

repaid). The programme is holistic and allows for a complete package of measures to be included in energy efficiency works, as well as allowing eligibility for loans for almost all homes regardless of tenure and location.

**HOW LONG HAS IT BEEN RUNNING?**

The scheme has been running in various similar forms for the last 30 years.

**WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?**

Currently, over 3 million homes have an improved level of energy efficiency due to use of the KfW scheme, or around 5.3% of the total housing stock. An estimate from KfW as to the total carbon savings suggests a total figure of around 3million tonnes per year - an average reduction in emissions of 59%.

**WHAT LESSONS CAN BE LEARNT?**

Even with the scheme in place, the refurbishment rate isn't particularly high – this is due to the price of refurbishment. A lower rate of VAT might help drive an increase in refurbishment. The entire budget for the scheme is utilised each year, but no research has been done into demand for the scheme beyond this, and the impact that additional funding availability might have on levels of take up of the scheme.

**HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?**

The level of public support in Germany for action on climate change is high, in comparison to other countries. This, in addition to the strong reputation of KfW for delivering efficient construction options has allowed the scheme to be successful. Other countries who wish to adopt a similar scheme will need to be mindful of this and ensure that the benefits and requirements of the scheme are clearly defined and supported with a well designed system and process.



## DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT?

Some areas of Germany offer additional regional or local energy efficiency subsidy, but these complement the scheme and improve its attractiveness rather than being a necessary requirement for it to function.

## WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?

For retrofit, it seems unlikely that reaching nZEB will ever be a cost-optimal option, even with grant and loan funding schemes in place – although in many cases the energy savings generated can be significant.

Data provided by KfW indicates that 12,500 GWh of energy have been saved in total by the scheme up until 2004.



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## 6 KredEx Estonia

### WHAT IS IT FOR?

**KREDEx** KredEx has been developed to assist people with building or renovating their home, and to develop an energy efficiency mindset. It decreases the problem of lack of service provision of low profitability schemes which would otherwise not be offered by private organisations. The scheme was developed to offer a variety of financial options in the form of grants, loans and loan guarantees; and in this way it ensures that a significant proportion of residents and social groups are able to access a form of funding which will work for them.

### HOW IS IT FUNDED?

KredEx is a financial engineering instrument (a credit and export guarantee fund) which is state owned. It is an independent not-for-profit organisation operating as a provider of financial services, enabling implementation of the national housing development plan. The organisation operates on the principles of state guarantee and self-sustainability.

It enables provision of a state grant for 15-35% cost of total apartment building renovation, utilising EU structural funds to allow delivery of apartment building renovation loans.

### WHAT IS THE AMOUNT OF FUNDING AVAILABLE?

The total amount available varies each year.

### HOW DOES IT WORK?

Three different schemes are provided as part of the KredEx model:

- Renovation grant for apartment buildings
- Grant for energy audit of apartment buildings, evaluation and drafting of building design
- Guaranteed long term renovation loans with low interest rate – mainly used for insulation of the facades and roof, and renovation of heating systems.

### HOW LONG HAS IT BEEN RUNNING?

The scheme was established in 2001 by the Ministry of Economic Affairs and Communications.

## **WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?**

Between 2009 to 2011, 391 loan agreements with a total amount of 34.3m Euro have been utilised - 45.2m Euro of investment in renovation in total. This equates to 14,680 apartments and 33,700 residents who now benefit from energy savings. The average predicted energy saving is around 39.3%.

## **WHAT LESSONS CAN BE LEARNT?**

Initially, faith in the project was minimal. Some good pilot projects to demonstrate successes and benefits were required to generate interest and improve public confidence – and following this the scheme really took off.

KredEx has comprehensive marketing campaigns which aim to promote energy efficiency awareness and encourage take up of the loans available. This includes a variety of mediums including adverts both online and in print, direct mailing, liaison with banks and engagement and training for municipalities and stakeholders involved in delivery of energy efficiency work.

As a result, the scheme has proved so popular in the subsequent years that funding money has now run out.

This demonstrates the advantages of having a comprehensive structure which includes a clear legal position, support from the state, a well operated financial structure and a thorough system of promotion and awareness raising.

## **HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?**

The KredEx model provides funding on a whole building basis – a necessary requirement where the majority of homes are in apartment blocks. This could be an issue in countries where the model of tenure is significantly different. Undertaking a loan requires consent from all occupants of the building, or the majority as according to the individual housing association board agreement. This could be problematic where multi-tenure buildings are involved. The scheme may also not be suitable for areas where individual street properties are the norm as the loans work on a larger scale and are not available to individual property owners – however there are opportunities for smaller build-

ings (of three apartments minimum) to take part in the scheme so it may be adaptable.

The revolving model of funding appears to work well and is potentially possible in other countries, evidenced by the existence of various different revolving funds already operating elsewhere – however the somewhat convoluted reporting stream needs to be noted and perhaps adapted; currently in Estonia banks have to report to KredEx, who in turn report to the Ministry, who then report to the EU, meaning that the process is time consuming.

State aid rules may also be an issue and this should be noted when considering set up of a similar scheme – currently this can take a long time, and in Estonia the time needed to set up the scheme was two years.

## **DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT?**

The scheme works without need for other funding streams. It is self-sustaining, using a revolving loan fund model. In recent years, additional funding has been obtained using structural funds and a loan from the Council of Europe Development bank to allow further guaranteed funding to be offered to customers.

On occasion, some municipalities set up their own schemes which can run alongside KredEx and provide complementary funding.

## **WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?**

The KredEx scheme sets the requirement for energy efficiency improvement of at least 20% for buildings of up to 2,000 sq. m.; and 30% for buildings over 3,000 sq. m.. 1 Prior to renovation, an energy audit is required for each property, and only work described in the audit can be financed. However, no performance targets have been set for assessing the total number of dwellings, sq. m. and percentage energy efficiency achieved per annum which makes analysing the total results difficult. Achieving better levels of energy efficiency is incentivised by higher levels of subsidy being available dependent on the final energy performance achieved. The average predicted energy saving is 39.3%.

## Case study example

### BEEN (Baltic Energy Efficiency Network) Project – Paldiski Road 171, Tallinn

This is an apartment building originally constructed in 1977, consisting of 60 apartments. The block is made up of five floors plus a basement which is unheated and four stairwells, built using a panel system. The roof was flat, the doors metal and the windows either wood or PVC.

Renovation involved adding a sixth floor, with a new roof. The new apartments on the sixth floor were able to be sold, adding additional revenue which could go towards the renovation project. Windows were replaced, balcony rails and partition walls were replaced and balconies were glazed. The outer walls were insulated, the heating system renewed and an individual heating expenses calculation system was installed.

Early results suggest that residents have seen a 29% reduction in energy bills, which means that the higher cost of expenses which have been generated by the renovation are more than covered. This is in addition to residents reporting an increase in living comfort and a more positive aesthetic appearance of the building.

#### Full case study report:

► [http://www.kredex.ee/public/Energiatohusus/BEEN/BEEN\\_BPP\\_raport\\_eng.pdf](http://www.kredex.ee/public/Energiatohusus/BEEN/BEEN_BPP_raport_eng.pdf)

## 7 'More with less': guarantee funds The Netherlands

### WHAT IS IT FOR?

The programme is intended to enable residents to make energy efficient which result in maximum impact, with as little disruption as possible.

### HOW IS IT FUNDED?

The government guarantees loans for energy saving measures, using European funding.

### HOW DOES IT WORK?

A More with Less provider will take care of the entire process for the resident, arranging for certified energy advice all the way through to installing required energy efficiency measures.

Various different grants, subsidies and loans are available under the scheme, dependent on area of residence. Examples of these include:

More with less grants – of up to € 1000 provided that the energy saving measures selected following an energy assessment meet a minimum criteria. For private owners.

Green funds scheme – available to private home owners in occupation. Low rate loans provided for funding to purchase solar cells, solar collectors and heat pumps, or measures which result in the energy

efficiency rating of the house improving by at least four labels. Interest rates vary but are around 1.5%. Duration of up to 15 years allowed.

VAT reduction insulation work – reduction on the VAT rate for renovation, reduced from 21% to 6% for labour. Temporary scheme, for one year from March 2013. For owners and tenants of housing.

Sustainability loan – fixed low interest loan between € 2500 and € 7500 for up to ten years and up to € 15000 for 15 years. 3% interest rebate. For owner occupiers.

The programme is intended to ensure fixed monthly expenses are achieved which will be at least off-set by the monthly gain in savings as a result of reductions in the energy bill.

### HOW LONG HAS IT BEEN RUNNING?

Since 2008.

### WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?

The scheme aims to achieve a 20-30% improvement in energy efficiency in 3.2 million buildings by 2020.

### WHAT IS IT FOR?

THFC aggregates private financing requirements of housing associations so that they can gain access to the best competitive rates in the financial market. Funds are raised for new housing association development, for repairs and improvements to existing stock, and for regeneration – including energy efficiency work.

### HOW IS IT FUNDED?

THFC obtains funding through bond issues, bank loans, and funding from the European Investment Bank.

### WHAT IS THE AMOUNT OF FUNDING AVAILABLE?

THFC has a current loan book amount of £3.1 billion (March 2013).

### HOW DOES IT WORK?

THFC acts as aggregator, borrowing in its own name and then immediately on-lending to registered providers, on similar interest and repayment terms. The THFC undertakes a credit appraisal, examination of financial ratios, and performance indicators, before deciding whether to lend. Housing associations must provide security in the form of land – either housing or development land.

### HOW LONG HAS IT BEEN RUNNING?

Since 1987.

### WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?

THFC is the longest established funding source for Housing Associations in the U.K., and offers flexibility and efficiency for borrowing. In the last year THFC has raised £257.6m on behalf of 24 housing associations, and has also negotiated a further line of long-term credit from the European Investment Bank for the amount of £400m which will be allocated throughout the next year to fund development of Energy Efficient Social Housing. This is in addition to the THFC being appointed ‘fund manager’

for the Greener Affordable Housing Development fund which is part of the JESSICA initiative.

### HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?

This model has the potential to be replicated in other countries relatively easily, if they are able to set up an aggregating body with support of the social housing sector. THFC is successful because it has a strong board with a good range of members who are specialists in housing finance, an excellent credit rating and flexible and sustained good performance in the bond market which makes it an attractive prospect for investors as well as housing organisations.

### DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT?

THFC works by aggregating various streams of funding, therefore by its nature it requires available funding streams in order to work. However, the funding streams currently being utilised and accessed have produced excellent results for the social housing sector which has been able to access funding that would either not be possible due to scale, or which has a lower level of interest than could be achieved by most individual housing organisations.

### WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?

THFC provides funding options for a wide variety of social housing schemes, and therefore the results are extremely wide ranging – however the potential is there to provide funding for nearly Zero Energy Building.



## Case study example

### Gallions Housing Association – Park View Hub

THFC was allocated management of £12million of funding to finance energy efficient retrofit investment of social housing in London, using the JESSICA London Green Fund which is a part of the EU structural funding programme.

Three registered providers including Gallions HA were selected to be allocated loans from this fund to finance a variety of projects.

The Park View Hub project will involve regeneration of a housing block containing 18 flats, all of which will be renovated to the PassivHaus equivalent standards. This will be done with residents in situ, using an innovative insulation method which allows installation of a new energy efficient building envelope.

## 9 White certificates France

### WHAT IS IT FOR?

White certificates are tradeable certificates which are used to help facilitate achievement of energy savings targets. Eligible bodies (including public housing organisations) can achieve funding for energy retrofit schemes through acquisition and sale of White Certificates once the scheme has been completed.

### HOW IS IT FUNDED?

White certificates are given to any eligible organisation which implements energy saving measures, and these can then be sold to the energy supplier which has a target level of energy savings they are required to reach each period. The funding level will vary dependent on the measures being implemented – the energy supplier is free to choose the schemes which they would like to work with.

### HOW DOES IT WORK?

Energy suppliers are required to meet an energy savings target, or else pay a penalty. They can either implement programmes themselves, or buy white certificates from an organisation which has achieved energy savings and been issued with a white certificate which they can trade. The certificate is given to the organisation once the end result of the project has been achieved (the energy saving measures have been completed).

In principle, all energy saving measures and all types of fuels are eligible as long as they are not already covered by the emissions trading scheme: there are 93 'standard methodologies' approved – 39 in regard to housing.

### HOW LONG HAS IT BEEN RUNNING?

France introduced their White Certificates scheme in 2006. The scheme is now about to enter its third period, following the end of the second period on 31<sup>st</sup> December 2013 which was underpinned by the 'Grenelle 2' law introduced on 12 July 2010. The second period restricted the list of eligible applicants to energy suppliers, local and regional authorities, and public housing and the ANAH (national agency of housing) in order to simplify the scheme. The third period has been developed to further simplify the system of White Certificate applications, and also requires an increased level of energy savings.

### WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?

The first period (2006-2009) was a success with more than 65 TWhc delivered (in comparison to the target of 54 TWhc). As part of this, 550,000 high-performance heating systems such as condensing boilers and heat pumps were installed, and 340,000 buildings received improved thermal insulation.

## WHAT LESSONS CAN BE LEARNT?

The process is complicated by the fact that it relies on two different mechanisms to work – firstly, organisations must find initial funding to carry out work, and then secondly, carry out the process of obtaining and selling their white certificates. This process is further confounded by the fact that there is only one buyer – EDF. In the future, methods of mainstreaming different funding are being considered. There is also an issue in regard to the overall result – this method targets energy efficiency increases, rather than requiring an overall reduction of energy consumption (meaning that although there may be an increase in energy efficiency, this may not translate into actual savings for tenants, for example due to fuel poverty).

White Certificate schemes can also favour more cost-effective options over deeper renovation projects which require higher levels of funding for the same energy savings. This can be an issue for housing associations that have already carried out the most cost-effective measures and are left with properties which are energy inefficient yet need require more investment for improvement.



Most stakeholders in the White Certificates programme have also expressed a need for a simplification in the process and application for White Certificates, which can be time consuming – it is a four stage process requiring documents which prove:

- 1 **Active and incentive contribution.**
- 2 **The reality of the actions undertaken.**
- 3 **The conformity of the action to the quality criteria required.**
- 4 **The absence of double counting (meaning that savings realised through use of this scheme cannot also be used as evidence for other methods of funding).**

## HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?

Several other countries including Italy and Denmark already have similar schemes, with varying degrees of success.

## WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO

The Grenelle laws have set a target of all new builds being low energy by 2012, and all must be energy positive by 2020 (they will produce more energy than they consume). Grenelle I also sets targets for a refurbishment rate of 400,000 homes a year from 2013, and 800,000 social housing units by 2020. White Certificates are one of the methods that can be utilised to assist social housing organisations in achieving these targets.

## 10 Better Energy Warmer Homes Ireland

### WHAT IS IT FOR?

To improve thermal efficiency of homes at risk of energy poverty, through enabling use of a partnership approach which should result in a cost effective and innovative delivery of service. Also intended to encourage implementation of deeper / more challenging measures.

### HOW IS IT FUNDED?

Through use of EU structural funds and co-funded by the Irish Government.

### WHAT IS THE AMOUNT OF FUNDING AVAILABLE?

4m is available in grant funding for the programme.

## HOW DOES IT WORK?

Once a group of fuel poor households requiring energy efficiency upgrades has been identified, the housing organisation may apply for a grant. The cost of the upgrades must be paid for upfront, and the grant money is drawn down once all payments have been made. The programme is intended to achieve efficiencies and value for money through using this method. The grant process is competitive and not all applications will succeed.

Non fuel-poor homes may be grouped with fuel poor ones, as long as the fuel poor group makes up at least 50%, and ideally more than 70%. The grant will cover 100% of eligible costs for fuel poor households, and either 30% of eligible costs for non-fuel poor or alternatively the equivalent of the Better Energy Homes grant.

### Eligible costs include:

- Roof insulation
- Wall insulation (cavity, dry lining and/or external)
- Windows
- External door replacement
- Boiler upgrade / replacement
- Heating controls upgrade
- Solid fuel room heaters
- Solar panels
- Chimney draught excluders

## HOW LONG HAS IT BEEN RUNNING?

The Better Energy Homes scheme was launched in March 2009 (a pilot of the scheme was also carried out in 2008).

## WHAT RESULTS HAVE BEEN ACHIEVED SO FAR?

75,000 homes have had measures installed under the programme.

## WHAT LESSONS CAN BE LEARNT? HOW EASILY COULD IT BE REPLICATED IN OTHER COUNTRIES (AND HOW)?

### Lessons learned include:

The need to ensure quality oversight of training providers, making sure requirements are clearly defined before delivery of the programme begins. The need for better preparation. A dynamic scheme such as this will necessarily undergo functionality

changes and upgrades and this should be factored in early.

The requirement for a clearly defined scheme, with all aspects having a clear rationale – it is necessary to anticipate potential legal challenges and the means to deal with them efficiently.

Consideration of requirements of a compliance mechanism both for assessors and housing organisations would benefit from enhanced input for future schemes.

## DOES IT WORK ON ITS OWN OR DOES IT NEED OTHER FUNDING STREAMS/SUPPORT ?

The scheme works without requiring other forms of funding.

## WHAT ENVIRONMENTAL STANDARD HAS IT ACHIEVED – I.E. HOW FAR ALONG THE ROAD TO NEARLY ZERO?

Whilst the scheme does not result in homes which would be classed as nearly Zero Energy, it has produced significant improvements in building energy ratings. Prior to improvements being undertaken, only 16.5% of homes were rated C3 or better. Following improvements, this increased to 60%.

### Full results:

► [http://www.seai.ie/Publications/Statistics\\_Publications/Energy\\_Forecasts\\_for\\_Ireland/Economic\\_Analysis\\_of\\_Residential\\_and\\_Small-Business\\_Energy\\_Efficiency\\_Improvements.pdf](http://www.seai.ie/Publications/Statistics_Publications/Energy_Forecasts_for_Ireland/Economic_Analysis_of_Residential_and_Small-Business_Energy_Efficiency_Improvements.pdf)



istockphoto



## OVERALL CHARACTERISTICS OF SUCCESS

Analysis of these models has highlighted some key areas which seem to lead to a financial mechanism being a success.

### **EAST OF ACCESS AND ATTRACTIVENESS TO FINANCIAL ORGANISATIONS AND CUSTOMERS**

In many cases, lenders can be wary about financing energy efficiency work as much of the market is currently untested and the risks are perceived to be high. This in turn leads to higher rates of interest and fees which can reduce the attractiveness of a scheme to consumers. One way in which member states have addressed this issue - for example the German KfW scheme – is by using a state guarantee which allows the risk to be shared. Other possible solutions include the U.K.'s Housing Finance Corporation, where an organisations acts as aggregator for loans and accesses low rate funding which can then be passed on in smaller amounts to housing organisations.

Ease of understanding is also important – the less complex the scheme is, the more likely it is to be a success both with customers and lenders.

### **COST**

This is a major success indicator for any scheme. Where a scheme costs a lot to administer, the funding for this must obviously come from somewhere and generally this is passed on to the end consumer resulting in higher rates and fees. Schemes where administrative costs are not borne by the housing organisation (for example Estonia's Kred-Ex scheme, where the majority of administration is carried out by the lending bank) tend to have lower costs which may make them more successful. A robust and well thought out assessment mechanism for the scheme will also allow costs to be lower.

### **BECOMING SELF-SUSTAINING**

This is an important hurdle for many financial mechanisms, as state or private funding is not ideal if the scheme is to become a long term success. As seen with the U.K.'s ECO model or the German KfW model, uncertainty about long term funding can cause problems with the uptake of the scheme as organisations will be unsure about the future costs and implications. One method to address this issue is the use of a revolving fund, where savings generated are ploughed back into the model to be reused and generate further savings. The Estonian Kred-Ex model is a good example of how this can be done successfully.

### **LEGAL ISSUES**

Any successful scheme must be supported by a well considered and implemented framework which allows it to operate effectively. Planning requirements, building codes, property law, and legal requirements for financial transactions can all have a detrimental impact on an energy efficiency model if not fully taken into account and if necessary adjusted.

### **STAKEHOLDER KNOWLEDGE AND ENGAGEMENT**

A successful scheme also requires a robust delivery mechanism in regard to the people who will actually be carrying out the works. It is therefore key to make sure that the contractors and stakeholders involved have the knowledge and capacity to undertake the work, as well as being confident in the scheme and happy to buy in to it.



## LEVELS OF RETROFIT

The final achievable level of retrofit varies widely across the models discussed. Some of the most successful models – KredEx and KfW for example – offer a sliding scale of grant or subsidy which is linked to the final energy performance level achieved. Measuring actual savings rather than predicted savings may be an important factor in the overall success of a scheme.

## MARKETING AND TRUST

Various mechanisms are available to generate trust in a scheme. Simplicity, proven results from pilot schemes and links with already known and respected household names such as well known banks as used in the KfW model can all help build trust. The use of warranties and quality marks is also important to give customers confidence that the work and funding they are undertaking is trustworthy. Good marketing which promotes this trustworthiness and builds awareness of the scheme and the results has also been shown to drive uptake, as was done with the KredEx model.



### Steps needed to achieve compatibility between European and national funding mechanisms

The upcoming round of structural funds creates a great opportunity for social housing organisations to access large amounts of funding for energy efficiency improvement work. However, for the maximum potential of this opportunity to be realised, it will be necessary for organisations to have a much better understanding of structural funds and how they operate and can be accessed. In this respect, capacity building and knowledge sharing will be key to ensure that funds are as accessible as possible.

In addition to this, it will be important to feed into the programme structure itself with the aim of ensuring that method of accessing funding is designed to be as simple as possible.

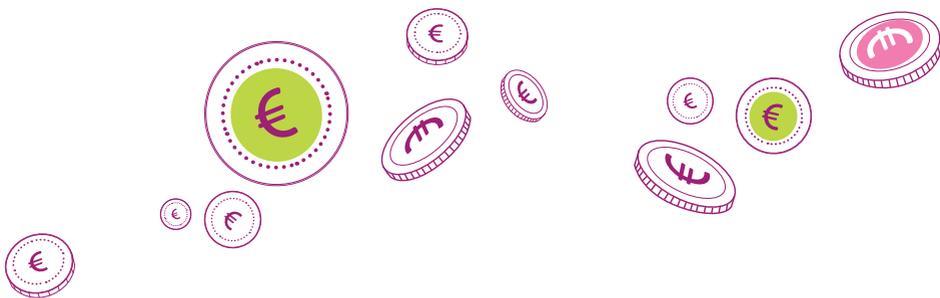
Accessibility and understanding are not the only barrier to effectively utilising European funding in a national context. A further issue which currently has an impact is the fact that culture and industry are currently lagging behind the regulation – the E.U. directives and regulations are in place to legislate for a lower energy Europe by 2020, but the will of the people and the knowledge and skills of the professions who will be tasked with carrying out the works which will lead to this result are not in alignment at the present time.

To achieve buy-in from residents has been shown to take time, and also be a fairly significant additional expense. This will need to be considered and factored in to any technical timescales compiled, to ensure predicted outcomes can actually be achieved and to allow energy efficient thinking to become an embedded part of national culture.

Creating confidence in energy efficiency – both the concept and the technology which can provide it – will also have a positive impact on energy efficiency lending, which is currently constrained by the high levels of perceived risk on the behalf of financial institutions who are often reluctant to lend in relation to untested and unpredictable methods and technologies.

### Points which require extra consideration for low income housing

Although various European funding options are available as discussed previously in this report, one challenge for many housing organisations is the threshold required for accessing these funds. Often, projects of individual housing organisations fall far below the required funding threshold for funding applications, and this leads to necessitating formation of partnerships with local authorities, municipalities or collaborative groups of organisations – all of which leads to a far more involved, bureaucratic and inefficient process.



One proposal to counteract this issue is the creation of a European level financial initiative which allows a national aggregator (such as Local Enterprise Partnerships – LEPS - in the U.K.) to hold an allocated sum of funding, and act as distributor for this funding at a lower threshold requirement.

On top of this, the method of access needs to be addressed and simplified – currently there are lots of different schemes, all with different rules, forms and criteria, and all requiring their own due diligence to be performed. This takes a huge amount of time and money to achieve, and streamlining the process to create a simple ‘one stop shop’ which would allow a single application to generate access to a variety of different funding options.

Establishing a functional, accessible and efficient funding source is critical, as the housing industry needs to make savings now – there is no time to wait for Pay As You Save (PAYS) schemes to become cost effective. Achievement of the necessary levels of retrofit in particular will require significant subsidy, or it simply wont be possible due to the issue of cost optimality and the current misalignment with increased standards.

And finally, social housing organisations will need to be aware of, and prepared for, the fact that there will be competition with private construction companies for subsidies once nZEB standards agreed and harmonised – and they will need to ensure that they are in a favourable position to be able to adequately compete for this funding and achieve a positive outcome.



\* Shutterstock



## **CECODHAS Housing Europe**

### **The Federation of public, cooperative and social housing**

CECODHAS Housing Europe is a network of national and regional housing federations of housing organisations. Together the 43 members in 18 European members States manage 25 million dwellings which represent 12% of the total housing stock.

Its members work together for a Europe that provides access to decent and affordable housing for all in communities which are socially, economically and environmentally sustainable and where all are enabled to reach their full potential.

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