EuroPHit

D 4.3_ Report on best practice financing models for energy efficient refurbishment

INTELLIGENT ENERGY – EUROPE II

Energy efficiency and renewable energy in buildings

IEE/12/070

EuroPHit

[Improving the energy performance of step-by-step refurbishment and integration of renewable energies]

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Introduction

The investigation of the sources of funding energy efficiency and RES measures and projects aims to study and analyze the tools that are applied by various EU countries to promote the energy efficiency targets of Directive 2012/27 /EC. The research is based on the information gathered by survey involving more than 35 experts from 8 countries. (For more information see: EuroPhit O4.6_20151017_EnEffect.pdf and

EuroPhit O4.5_EnEffect Barriers 20151017.pdf)

Although the project EuroPhit in itself aims to achieve energy efficiency parameters of buildings over those officially required by the legislation in the Member States, many sources of funding are still only financing the achievement of relatively low energy efficiency standards. Only few of the financial sources and promotional programs identified encourage the introduction of high standards of energy efficiency or provide a larger share of the subsidy in achieving greater energy savings.

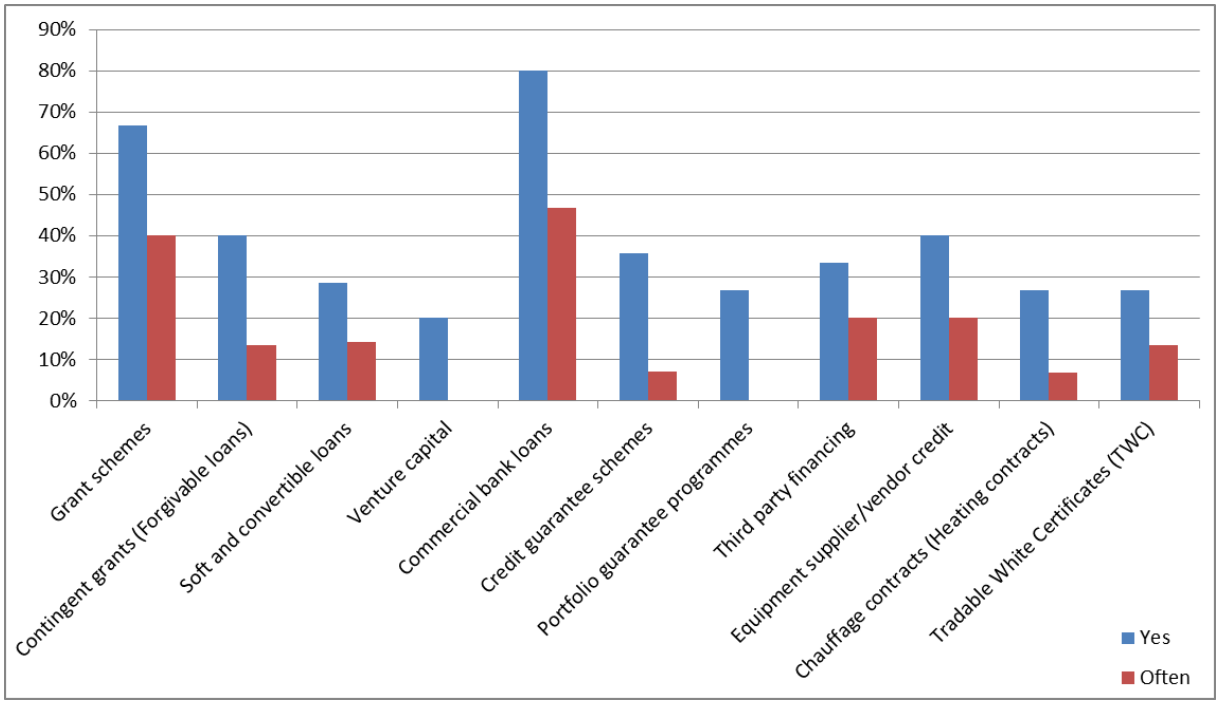
However, we believe that the existence of mechanisms and experience in the financing of energy efficiency in the EU countries is an important prerequisite for achieving the desired high energy efficiency performance of the buildings in the longer term. The ability to combine different sources of financing, along with grant programs to support energy efficiency and commercial bank financing allows the achievement of the desired high parameters of energy efficiency in residential and public buildings at a relatively affordable price in the near future, using the “step by step” method for realization of the projects.

Besides specialized financing funds and energy efficiency programs, some private banks based in EU have also developed products for financing energy efficiency in buildings. Most credit lines offer lower interest rates on loans or grant component to specific energy efficient equipment and/or materials. Some banks utilise energy labelling of buildings when financing renovations in households. These financial products often demonstrate a life cycle orientated approach to financing energy efficiency and focus on how financially viable investments in energy efficiency can reduce the maintenance cost and the energy and water consumption of a building.

I. General overview of the use of the existing EE financing mechanisms

Almost all known financial mechanisms used in project financing could also be used in energy efficiency (EE) financing of building refurbishment. Some financial mechanisms are specific to energy efficiency projects. This allows flexibility and reduces project risk by combining different sources of financing and risk guarantee.

Figure 1: General overview on the use of the existing financing models (the information is gatered by internet based questionnaire to experts working in the field of energy efficiency)



- Direct loans from commercial banks are the largest resource available and most accessible for most of the people. The direct subsidy often varies between 10 and 30% of the investment, which covers the interest expenses and a small portion of the principal. The technical and economic evaluation of energy efficiency projects is still a barrier for the financial institutions. The uncertainty of the fuel prices forces financial institutions in more than half of cases (54%) to rely only on the assessment of the overall creditworthiness of customers and not on the profitability of the project.
- Grant schemes are another mechanism promoting energy efficiency in almost all European countries. In most countries surveyed (81%), there are governmental programs to promote energy efficiency measures.

  The role of governmental policy remains high on the introduction of energy efficiency on a European scale. The aim should be these funds to be directed to projects with better EE requirements, such as NZEBs. A guiding principle should be greater subsidy to be granted for projects with higher EE standard.

  The financial guarantee schemes for energy efficiency projects aims to reduce the risk in energy efficiency projects and thereby attract financing from commercial banks. This financial product has still very limited application. The governmental and

quasigovernmental institutions like the energy efficiency agencies and national energy effuiciency funds could play a very important role for facilitating the banking financing for energy efficiency projects through providing partial credit guarantees in favour of commercial banks with coverage up to 50% of the outstanding principal.

- Funding from a third party or so-called ESCO contracts are an appropriate mechanism to promote energy efficiency. This mechanism is being promoted in Bulgaria by the EBRD providing additional financial recource to BEERSF for partial credit guarantees to commercial banks.The tax incentives in the application of high technologies for energy efficiency are applied in buildings most often in the form of reduced property taxes or on the purchase of equipment. The approach to encouraging investment through tax breaks has dubious advantages, as encouragement is provided indirectly for an extended period of time and thus has an insignificant effect on the business environment for the financing of energy efficiency projects, while at the other hand there is a strong motivating effect on the project owners.
- In some countries like Italy, France and Bulgaria the trading schemes with White Certificates could generate additional revenue for EE projects.

II. Existing financing models

1 Energy Efficient Renovation Program of the KfW Bank Group , Germany

Sources:

www.kfw.de

www.kfw.de/151

www.kfw.de/152

The loans from KfW Bank Group are supporting renovations and the conditions of the loan are according the energy efficiency level achieved. This is one of the best models, used in EU. The redemption grant is up to 22% and the interest rates are between 1 and 2% for 10 to 30 years.

The **Energy Efficient Renovation Program of the KfW Bank Group** provides preferential loans and grants for single energy efficient components and for comprehensive retrofits. The Heating Cost Ordinance mandates metering and pricing of district heat according to actual consumption, and the Eco-tax taxes energy inputs, ensuring a fair pay-back period for retrofitting investments. The German Tenancy Law is under revision to allow landlords to capture benefits of investments currently lost due to split incentives.

Funding and coordination are managed by the National Development Bank (KfW).

The Energy Efficient Construction Program of the KfW Bank Group provides preferential loans, including loans for new buildings that significantly surpass the building standard. The redemption grant is up to 22, 5 %, depending on the efficiency achieved.

The German public bank KfW has subsidised housing renovation for many years. KfW finances itself at low rates on the capital markets thanks to its AAA rating and the guarantee of the Federal State. KfW receives a subsidy from the government to lower the interest rate at which it lends to the commercial banks, which can thus propose loans to homeowners under market rates. Interest rates are between 1 and 2 % for 10 to 30 years. A label system called “KfW energy efficient house” has been established with heat consumptions corresponding to 55 up to 115 % of the standard for new buildings, which means that interventions on the envelope are usually needed. The interest rate and duration of the loans are more attractive for project reaching higher energy efficiency. Loans are also available for individual measures. KfW also gives grants for engineering and construction supervision (50 % of costs, up to €4,000) and for the investment (up to €15,000). Grants are often present in soft loan scheme because they reduce the upfront costs for the building owner. In 2011, in line with previous years, 133,000 homes have obtained loans (€2.8 bn) and 48,000 have obtained a grant (€51.5 m). This corresponds to a total investment of €3.9 bn, creating or maintaining 52,000 jobs (person years) and creating €1.3 bn additional tax incomes. Projects have included insulation measures in 80 % of the cases, and 100 % for projects reaching a “KfW energy efficient house” label. Soft loans make the investment more attractive to the building owner, although he still bears the costs and risks. They are a very efficient way to finance energy retrofitting of buildings, especially in the housing sector. However, their impact is naturally limited to building owners who are able to take on

additional debt. A large share of building owners cannot or do not want to increase their debt for investments in energy renovation; for those buildings, solutions based on third-party investment may be more adapted.

Analysis of Energy Efficient Renovation Program of KFM, Germany	
Advantages	**Disadvantages**
Soft loans can help bring technologies through to revenue generation and commercialisation. In the case of energy efficiency this will be the preferential loans, including loans for new buildings that significantly surpass the building standard. Low- or no-interest rates and deferral on loan reimbursement with grace periods help start-ups bridge the financing gap both from the side of customers and from the side of financial institutions. This supports the achievement of higher standards through implementing new energy efficiency technologies like triple glazing and new insulation materials.	This is a finance mechanism for pre-commercialisation stage technologies. The support of the government through budget funding or budget guarantees is necessary, which limits of the volume of operations. The limited access to funding provided from commercial banks and specialized EE funds for project financing still exists for group of people which are considered as not creditworthy.

Figure 2: Analysis of Energy Efficient Renovation Program of KFM in Germany in terms of advantages and disadvantages

2 Klimaaktive programme and EIB loans, Austria

Sources:

http://www.klimaaktiv.at/bauen-sanieren
www.klimaaktiv-gebaut.at

http://europa.eu/rapid/press-release_BEI-14-3_en.htm

http://www.passreg.eu/index.php?group=1&level1_id=289&page_id=334&lang=de

PassREg_Success_Guide_final.pdf

Success_Model_Tyrol.pdf

Klimaaktiv programme is the Austrian climate protection initiative launched by the Federal Ministry of Agriculture, Forestry, Environment and Water Management, embedded in the Austrian federal climate strategy. The budget is approximately EUR 7 million/year.

Klimaaktiv in the building sector aims to promote ecological, energy efficient new buildings, as well as retrofitting initiatives for old buildings. The klimaaktiv building standards is the guiding principle for environmental change and energy efficient design throughout Austria. Single-family homes, residential buildings and office buildings have all already been built in klimaaktiv quality. The klimaaktiv building standard exists for residential and office buildings, for new buildings and also for renovations. The basic criteria were formulated in the year 2011. They constitute entry into klimaaktiv building in all categories. Specific klimaaktiv standards have been available since the end of 2011 for hotels, schools, nursery schools and nursing homes to enable even more targeted promotion in the sector of service buildings.
Another major focus point in addition to the declaration of compliance of buildings is the consulting of planners, property developers and house owners. The key players in planning and execution are supported nation-wide by klimaaktiv experts with tailor-made consulting packages.

More than 70 large-scale buildings with around 2,000 residential units and almost 200.000 m² of gross floor area benefited from a renovation consultation. Around 2,500 consultations have been carried out since the programme was launched in the year 2005. The objectives of the programme are:

- Establishment of the widely known label „klimaaktiv building“
- Pull the market towards ecological buildings
- Give all stakeholders an orientation
- PR are forced and promoted due the activities initiated by „klimaaktiv building“.

The EIB loan is used to co-finance refurbishment schemes that will enhance the energy efficiency of residential and public buildings and also new housing with an energy efficiency performance substantially **above the required minimum level in Austria.**

In this way, the country is seeking to increase the proportion of buildings that consume almost no energy and are supplied from renewable energy sources. These buildings are also referred to as "nearly zero energy buildings" (NZEB). Austria will thus comply with the EU

directive requiring that all new buildings in the EU meet NZEB standards by 2021. For public buildings, this requirement already comes into effect in 2019.

The EIB loan is available for projects **leading to documented energy savings and or increased use of renewable energies.** These may include, for example, improvements to building shells or heating systems. Projects that use renewable energies for heating and electricity are also eligible. Both private and public sector projects may benefit from the funds.

Various subsidies exist at provincial level in Austria. Subsidies for renovation of buildings are put into effect either as investment grants (usually between 10% and 25%) or soft loans (with 1% to 4% interest for a period of 10 to 20 years).

New guidelines for housing subsidies in Tyrol came into force on October 1, 2013. Attractive subsidies are provided for renovation of residential buildings. With extensive renovations up to 2/3 of the heating costs can be saved. In addition, developers are rewarded for quality renovations with an eco-bonus of up to EUR 8,000 per family house.

Analysis of Klimaaktive Programme and EIB loans in Austria	
Advantages	**Disadvantages**
See advantages of KfW scheme Economic benefit calculations in Austria have shown that an investment of EUR 1bn in energy efficient building measures creates around 12 000 additional jobs. In comparison, an equivalent investment in private consumption generates around 4000 jobs and in exports around 6000 jobs.	See disadvantages of KfW scheme.

Figure 3: Analysis of Klimaaktive Programme and EIB loans in Austria in terms of advantages and disadvantages

3 Bulgarian Energy Efficiency and Renewable Sources Fund

Sources:

www.bgeef.com

One of the successful models is the work of Bulgarian Energy Efficiency and Renewable sources Fund (BEERSF) as a credit institution, a credit guarantee company and a consulting firm. BEERSF offers three main financial products: direct loans to projects, partial credit guarantees and portfolio guarantees. The Fund is recognized as an acting model of fund recommended *in Article 20 of the Directive 2012/27/EC: „Member States shall facilitate the establishment of financing facilities, or use of existing ones, for energy efficiency improvement measures to maximize the benefits of multiple streams of financing".*

Established in June 2005, the Bulgarian Energy Efficiency and Renewable sources Fund (BEERSF) is a public-private for-profit entity, independent from any public or private institution. BEERSF has the combined competences of a credit institution, a credit guarantee company and a consulting firm. It provides technical assistance to Bulgarian companies, municipalities and individuals in the development of investment projects in energy efficiency and then accompanies their financing, their co-financing or acts as guarantor to other financial institutions. The initial capitalization of EERSF is entirely with grant funds, its major donors being the Global Environment Facility (USD 10 million) through the International Bank for Reconstruction and Development (the World Bank), the Government of Austria, the Government of Bulgaria and several private Bulgarian companies. The total initial capitalization of the fund is € 11 million.

BEERSF has been structured as a **self-sustainable commercial entity** that concentrates its efforts on facilitating energy efficiency investments and on promoting the development of a working EE market in Bulgaria. The Fund's main environmental objective has been to support the identification, development and financing of viable EE projects, resulting in a substantial reduction of greenhouse gases (GHGs) in the country. Since 2011 BEERSF works entirely as a revolving fund, reinvesting the refund loans in new projects.Financial operations began in 2005 with a capacity to handle 20 to 25 projects per year, for an average size of €200,000.

BEERSF offers three main financial products:

- Credits with soft conditions and a flexible repayment schedule. The interest rate is close to the low level of the market. The clients are exempt from any banking fees.
- Guarantee products

Partial credit guarantees: BEERSF offers collateralized credit guarantees, covering up to 80% of the credit value to secure loans for EE projects contractors. Individual (per project) guarantee commitments could not exceed € **400,000**. Guarantees on greater amounts may be exceptionally provided requiring approval from the Management board. The credit guarantees provided by BEERSF have been recognized by the Bulgarian National Bank as first class collateral equivalent to a bank guarantee.

Portfolio guarantees for Energy Performance contracting: BEERSF provids uncollateralized guarantee to a portfolio of receivables of Energy Service Companies (ESCO) derived upon energy performance contracts (EPC). The Fund guarantees that it will cover up to 5% of the delayed payments of the covered portfolio. Statistically customer defects do not exceed 5 % of commitments and are more likely to be delayed than not paid at all. EPC portfolio guarantees for ESCOs reduces the risk of payment delays thus reducing the overall cost of financing. The portfolio guarantee for ESCOs is one of the most interesting features of the fund. ESCOs normally rely heavily on debt to finance their activities, which requires the cash flows from their projects to be precisely coordinated and budgeted. Delays in payment from clients, or customers defaulting, are likely to seriously disrupt the debt service of the ESCO itself.

The key characteristic of BEERSF has been its flexibility, which constantly monitors and takes due account of changes in the market environment and amends its strategy in accordance with these changing conditions. During the last then years, BEERSF has played an important role in providing a variety of dedicated products for EE projects in the Bulgarian financial market. Further to the success of Fund, a large number of local financial institutions have developed interest in financing such projects, thereby establishing a leveraging role for the Fund and growing the overall availability of such products in the market.

EERSF has the combined capacity of a lending institution, a credit guarantee facility and a consulting company. It provides technical assistance to Bulgarian enterprises, municipalities and private individuals in developing energy efficiency investment projects and then assists their financing, co-financing or plays the role of guarantor in front of other financing institutions.

The underlying principle of EERSF's operations is a public-private partnership. The Fund pursues an agenda fully supported by the Government of Bulgaria, but it is structured as an independent legal entity, separate from any governmental, municipal and private agency or institution.

Analysis of Bulgarian Energy Efficiency and Renewable Sources Fund	
Advantages	**Disadvantages**
Revolving mechanism – multiple reinvestment of the reimbursement funds of the projects which provides self-sustainability of the EERSF. Low costs for management of the Fund. High qualified technical team of EERSF which provides free assistance regarding quality of energy audit, risk analysis and project evaluation. Control, monitoring and verification on the implementation of the energy efficiency measures for each financed project. EERSF provides partial credit guarantees up to 80% of the loan principal not exceeding BGN 800 000. Oportunity for low-cost financing and co-financing with commercial banks. EERSF provides portfolio guarantees that will cover up to 5% (the percentage is negotiable) of the defaults of the delayed payments. Aplicable when the apartment owners have individual credits for energy efficiency retrofit of the building	Relatively limited financial resource of EERSF, which could not finance a large national building retrofit Although the credits from EERSF are with interest rate below the market level, the fund does not provide grant funding and requires collateral. EERSF provides financing within the legal standards for energy efficiency, however with a decision of the Management Board the Fund can stimulate higher standards by better loan conditions. The loan amount is restricted

from a selected commercial bank. Fixed interest rate for the entire period of the reimbursement of the loan – the costs of loan service are predictable and calculable and the loan price does not depend on the current state of the money market. Flexible repayment schedule in favour of the customers' needs. Individual approach to each client and fast technical and financial approval procedure EERSF finances up to 90% of the project. EERSF provides loans without any fees and commissions including prepayment fee after the second year of the loan reimbursement.	within BGN 30 000 minimum to BGN 3 000 000 maximum. The repayment of the loan is up to 7 years, which restricts a deep building retrofit project.

Figure 4: Analysis of Bulgarian Energy Efficiency and Renewable Sources Fund in terms of advantages and disadvantages

4 Grant for energy conservation, ECO loans, Tax credits, France

Sources:

http://www.french-property.com/guides/france/building/renovation/energy-conservation/

The combination of Grants, Interest free loans and tax credits is a good example for energy efficiency rennovations. However, the grant work must improve the energy performance of the property by at least 25%, which does not correspond to the high energy efficient purposes of EuroPhit Project.

4.1 Grants for energy conservation - Prime à la rénovation

A system of grant aid for home improvement, including energy efficiency, operates in France under the auspices of a government housing agency called "***Agence Nationale pour l'Amélioration de l'Habitat" (ANAH)***.

Access to the grants is subject to means testing. The following table shows the limits of income for different categories:

Household Size	**Ile de France**	**Regions**
One Person	€24,002	€18,262
Two Persons	€35,227	€26,708
Three Persons	€42,309	€32,119
Four Persons	€49,402	€37,525
Five Persons	€56,516	€42,952

The government estimates that 46% of households can now benefit from the grant.

In addition, around half of the local authorities offer additional aid, so that in some cases it is possible to obtain 100% grant funding for the work.

For owner-occupiers, where the property is considered to be insanitary, and in need of major works, the grant is up to 50% of the cost of the works, to a maximum grant of €50,000. Where the property is merely considered to be in need of improvement to bring up to acceptable standards, the grant is up to 50%, with a maximum grant of €20,000.

For landlords, grants are also available, and there is no test of resources. For major works to improve insanitary properties, it is €1000m², up to a maximum cost of €80,000 per property; for other works of improvement the standard rate in 2012 is €500m² up to a maximum cost ceiling of €40,000 per property.

4.1.1 Grant for energy conservation - Prime à la rénovation €3000

The grant of €3000 complements the above mentioned aid of the National Housing Agency (ANAH). The same categories of people are eligible. **The grant work must improve the energy performance of the property by at least 25%.** It is only available if carried out by an accredited tradesman.

4.1.2 Grant for energy conservation - Prime à la rénovation € 1,350

This grant of € 1,350 is attributed to households whose annual income does not exceed the maximum ceiling of €35,000 Euros and who do not benefit from the"*prime à à la renovation*" €3000.

To qualify for the grant, you will need to undertake a "bouquet de travaux" involving at least two of the following:

- Thermal insulation work of all of the roof;
- Thermal insulation of at least half of the external facing walls;
- Thermal insulation of at least half exterior facing glazing;
- Installation of a condensing boiler or combined heat and power boiler, or heat pumps other than air/air;
- Space heating or heating hot water by wood or other biomass;
- Heating of hot water by a renewable energy source.

The grants are only available if carried out by an accredited tradesman.

4.2 Interest Free 'Eco' Loan

An interest free loan (l'éco-prêt à taux zéro) for the cost of works of home energy conservation is very often used. **This loan is available with the tax credits** only for the persons which income is less than €30,000 / €25,000 for single persons). Persons with income above this could still take the loan, but would be ineligible for the tax credit.

There is no test of resources in determining eligibility for the loan. The duration of the loan is normally 10 years, but can be up to 15 years where at least three elements of work are undertaken. Eligible works include loft insulation and other types of work as listed above for tax credits, as well as renewal of a septic tank system.

In order to obtain the loan, one of three conditions must be fulfilled, depending on the type and age of property:

- Undertake at least two elements of work, called a "*bouquet de travaux"* or;
- Achieve a minimum level of energy performance standard, called a "*performance énergétique globale"*, or;
- Undertake the installation of a septic tank system.

The amount of the loan is up to €20,000 for two elements of energy conservation, and up to €30,000 for three or more. It is up to €10,000 for a septic tank alone, but this sum must be included within the maxium of €30,000.

Eligible properties are those constructed before 1st January 1990.

If the property was constructed after 1948 an energy performance study of your property is requred.

The loans are administrated by the banks.

4.3 Tax Credits for Home Energy Conservation

Tax credits are available for heating and energy saving works, even if there are no income tax paid.

It is only available to those who own a property in France as their **principal home**, so second home owners are not eligible.

The tax credit is not available for new properties under 2 years old.

Since 2014 landlords are not eligible from the tax credit.

The works for which a tax credit is payable are:

- Condensing boiler
- Double glazing
- Insulating shutters
- Wall insulation
- Hot water insulation
- Central heating controls
- Equipment for renewable energy for heating and/or hot water
- Combined heat and power

Since 2014, the installation of solar panels and rainwater harvesting systems no longer quality for a tax credit. Neither are heat pumps, other than air/air, eligible.

Since 2014 the 10 different levels of tax credit previously available have been replaced by two rates.

The first lower rate of 15% is only available to those on a maximum income threshold, which is related to household size. For a single person this is around €25,000, for a couple around €35,000 and for a couple with a child around €40,000.

The second higher rate of 25% is not subject to a test of resources, but is conditional on at least two elements of energy conservation works - *bouquet de travaux* - being carried out. The works can be carried out over two years.

There are maximum limits on the level of the tax credit that can be granted, although these are quite generous. Thus, the maximum for one person is €8000, and €16,000 for a couple, which is increased by €400 for each additional person in the household. The allowance can be received over a five year period. No means testing is carried out.

4.4 Rate Relief

Rate relief offers a reduction in the amount of income tax payable. There a reliefs for energy conservations and for new buildings withy energy efficiency above the regulations.

- **Rate reliefe for energy conservation works**

Local authorities are permitted to exempt from the"*taxe foncière*"those older homes that have had important energy conservation works carried out to them.

This exemption applies to those dwellings built before 1989.

It is also on condition that the expenditure in the previous year on such works exceeds €10,000, or 15,000 over the previous three years. The cost of labour is excluded from this calculation, although it does include VAT.

The exemption is at the rate of 50% to 100% for a period of up to five years.

Analysis Analysis of Grant for Energy Conservation, ECO loans, Tax credits, France	
Advantages	**Disadvantages**
The program for home improvement, including energy efficiency, provides grant funding depending on household size, regions, type of ownership. Grants for energy conservation can be obtained up to 100% grant funding. The grant work must improve the energy performance of the property by at least 25% or at least two measures must be implemented. Long term interest-free loans are available in combination with grant funding. The loan duration is up to 15 years and up to EUR 30 000. The interest free loans are administrated by the banks and is an approved funding mechanism. Tax credits (available for heating and energy saving works) for principal home. The financial scheme is determined by the income of the beneficiary as the incentives are for the individuals with lower income. Guarantees for quality implementation of energy efficiency measures are provided by the project through the use accredited tradespeople. The experience of energy efficiency renovation in France and the combination of grants, interest free loans and tax credits is an innovative approach for implementing EE measures.	The grant funding improves the energy performance of the property to a relatively low level (at least 25%). The beneficiaries are not stimulates to implement energy efficiency measures in order the building to achieve higher energy classes (A / B). The program permits partial implementation of energy efficiency measures which does not improve to a necessary level the building quality and its energy efficiency.

Figure 5: Analysis of Grant for Energy Conservation, ECO loans, Tax credits in France in terms of advantages and disadvantages

5 Program "Energy Saving at Home , Greece

Sources:

http://www.startupgreece.gov.gr/content/energy-saving-home-program-modification-new-deadline

http://www.espa.gr/en/pages/staticOPEnvironment.aspx

In Greece the "Energy savings at home" programme subsidize 35 % of the final eligible budget for Class A and 15% -for Class B as an interest free loan.

This is a Program for energy upgrading of residential building envelopes. Financial aid for the upgrading of heating system boilers / burner units in existing buildings.

Financed by the European Union (European Regional Development Fund (ERDF)) and by National Resources, investments in the Saving at Home Fund, managed by TEMPME S.A., have been made by the following 4 banks selected in an open international invitation to tender: National Bank, AlphaBank, Eurobank, Piraeus Bank, for the implementation of the Program through revolving loans; through the Regional Operational Programmes (ROP) and the Operational Programme "Competitiveness and Entrepreneurship" (OPCE) and "Environment and Sustainable Development" (OPESD) under the NSRF 2007-2013.

- Budget: 396 million Euros
- Eligible budget per beneficiary application ≤ 15,000 Euros

Implementation body: Ministry of Environment, Energy and Climate Change, Operational Programme "Competitiveness and Entrepreneurship".

The incentives to be granted to beneficiaries in order to upgrade the energy performance of buildings are as follows:

- Interest rate subsidy (100%)
- **Subsidy on the final eligible budget (35% for Class A and 15% for Class B)**
- Minimum cost coverage for energy inspectors
- Processing fees

Only natural persons, the owners of eligible houses at a zone price of up to 2,100 €/m^2 shall be designated as beneficiaries. For the owners with individual/family income 40,000/60,000 Euros, the incentives include 100% interest subsidy (interest-free loan) as well as 35% grants.

For the owners with individual/family income 40,000-60,000/60,000-80,000 Euros, the incentives include 100% interest subsidy (interest-free loan) as well as 15% grant.

Analysis of Program "Energy Saving at Home", Greece	
Advantages	**Disadvantages**
The program, in an incetive based program, providing grant funding depending on the achievement of a higher energy class – 35% for class A and 15% for class B. The huge budget of the program together with the interest rate subsidy (100%) and the minimum cost coverage for energy inspectors supports the development of the energy efficiency market and refurbishment of buildings. The grant amount is determined by the income of the beneficiary as the incentives are for the individuals with lower income. Relatively appropriate amount up to EUR 15 000 per beneficiary for implementing EE measures. The program is implemented in the bank system and it is offered by the biggest four banks in the country.	A maximum grant amount per beneficiary, per application is set – EUR 15 000. The implementing of energy efficiency measures under the program is not tax free. Separation exists on the income of the beneficiary while beneficiaries with higher income are not stimulated to implement energy efficiency measures to achieve class A. Only the owners (individuals) of eligible houses at a zone price up to 2,100 €/m^2 shall be designated as beneficiaries which is a limitation for house owners with higher zone price.

Figure 6: Analysis of Program "Energy Saving at Home" in Greece in terms of advantages and disadvantages

6 Energiesprong, The Netherlands

Sources:
http://www.energiesprong.eu/

Energiesprong is a market-led, private sector retrofit model that has had success in the Netherlands in deep retrofit schemes. The model is a market transformation programme delivering fully integrated refurbishment packages supported by long term performance guarantees. The performance contracting model provides for a net zero energy solution that can be financeable due to the returns through the building performance and that is scalable. The model also uses processes that provide a rapid installation programme for houses, of less than 10 days, providing clients efficiencies that manage the cost and reduce disruption to residents.

The performance guarantees are provided for 30 years. To date, 800 refurbishments have been completed in the Netherlands without any government subsidies with current plans to refurbish 111,000 dwellings. There are plans in place to introduce the model to the UK and to France. This involved collaboration with local stakeholders including housing associations, fianciers and government organisations.The plans are targeted at both pubic and private housing.

III. Summary of the advantages and disadvantages of funding mechanisms in Europe.

Summary of the advantages and disadvantages of funding mechanisms in Europe	
Advantages	**Disadvantages**
Grants Grants provide the financial support necessary to ensure the success of a project or technology developer/business startup with a promising energy efficiency product.	Grants should be very specifically tailored to the stage of the technology and to be short term to prevent subsidy dependency.
Effective during high-risk project pilot/demonstration phases when the energy efficiency technology start-up has little or no access to capital. The advantage of contingent grants over conventional grants is that they steer the technology developer towards private and commercial financing. They can serve to cover some of the costs during the highest-risk development stages, and in some cases they increase investor confidence, which helps to leverage highly needed risk capital.	Contingent grants are grants that are 'loaned' without interest or repayment requirements until the technology has been successfully exploited. They should be very specifically tailored to prevent subsidy dependency.
Soft loans Soft loans and convertible loans can help bring technologies through to revenue generation and commercialisation. Low or no-interest rates and deferral of loan repayments, including terms such as grace periods between receiving the loan and when the first repayments are due, helping start-ups bridge the financing gap.	Finance mechanisms for pre-commercialisation stage technologies that could well be replicated for financing energy efficiency. Limited access to high risk loans provided from specialized EE funds.
Venture Capital The venture capital is an innovative public sector financing mechanism. Different models of public sector venture capital investment have been launched in the last decade, usually capitalized and run by the governments. In some cases with a mandatory matching private VC investor. Some are structured as partnerships of pooled public and private capital that are usually operated by an external private sector Fund Manager.	Venture capital is costly to the technology or project developer, because the investors receive both equity shares in the start-up, as well as a role in the management and technical developments of the company. To attract venture capital, the developer must present a business plan with a clear exit strategy.

The most accessible source of financing providing relatively low-cost funds both for necessary construction works and for energy efficiency measures.	Requires collateral and guarantees, which restricts the investment initiatives. Commercial lending institutions are reluctant to take on high risk. Debt financing might be secured when technologies have proven some extent of revenue generation.
Energy efficiency improvement projects are dependent on reducing the risk for the end-user including the use of guarantees and other risk management instruments. Debt guarantee mechanisms can offset some of the bank's risk. Most of the existing or emerging public sector guarantees are for energy efficiency projects. Credit guarantees could be the main catalyst to scale up private investment in energy efficiency.	Usually the credit guarantees cover up to 70% of the credit principal on pari passu basis or 30% on first loss basis, which does not cover the full project risk. Most energy efficiency guarantee programs in Europe typically provide 50% guarantee, and the programs worldwide do not exceed a 90% guarantee level.

Figure 7: Summary of the advantages and disadvantages of funding mechanisms in Europe.

IV. Barriers

Although there is great potential to improve funding opportunities to tackle energy efficiency there are some barriers to overcome to increase funding opportunities and meet the 2020 energy reduction target. (more information on: EuroPhit O4.5 EnEffect Barriers 20151017.pdf)

- A number of programmes for financing energy efficiency projects in buildings are designed to provide additional social support, thus this programmes in general are not appropriate to stimulate the achievement of higher energy efficiency standard.
- Financing, both public and private sector, available for energy efficiency projects continues to be quite limited in a number of countries particularly for proejcts aiming to achieve high performance levels.
- The relatively small size of the energy efficiency projects makes them unattractive for financial institutions.
- The lack of assets acquired for the project that could be used as collateral for the loan is a barrier.
- The technical and economic evaluation of energy efficiency projects is still difficult for the banks and needs to be improved to make funds more accessible whilst also ensuring quality standards are upheld.

V. Recommendations

Recommendations have been drawn from the overview of the specialised financing sources and lending mechanisms for energy efficiency measures and projects in Europe. (EuroPhit O4.5 _ EnEffect Barriers 20151017.pdf)

1. **Combining energy efficiency projects in greater investment packages** creates conditions for increasing the attractiveness of investments for the banks. The investment packages of energy efficiency projects pose significantly less risk of not meeting the expected minimum energy savings because the risk is distributed between multiple projects It can be expected the reduced energy savings on one project to compensate with bigger savings on another.

2. State intervention. In the short to medium term increased state intervention has a key role to play in providing finance for higher energy efficiency improvements. This is to ensure that higher energy efficiency savings are supported with better financing terms for building owners. In the longer term market led models should replace state supported schemes. Types of state intervention include:

- **Specialised financial institutions.** The creation of specialised financial institutions (Energy Efficiency Funds) for small energy efficiency projects financing could be a practical solution. Article 20 of the Directive 2012/27/EC recommends: Member States shall facilitate the establishment of financing facilities, or use of existing ones, for energy efficiency improvement measures to maximize the benefits of multiple streams of financing". Governments, through their controlled financial institutions such as development banks and various energy efficiency or clean development funds should intervene more actively in the market and create conditions for combining private capital from commercial banks with subsidy programs for projects implementing higher standards for energy savings.
- Special incentive programmes for builders owners
- Innovation subsidies for development of high effiency material and products
- Subsidy to fund upfront costs for builder owners to survey and complete technical and financial assessment of the best measures for the property. This is critical for as-built performance including cost savings and to manage risk.
- Government gurantees for loans provided by commercial banks. Examples of this include Bulgarian EERSF provides partial credit guarantees to commercial banks for energy efficiency projects, which cover up to 80% of the principal. Up to this point PCG projects totalling BGN 6.76 million have been provided with no stated claims and benefits paid to date. From the other side the Bulgarian EERSF insures part of its loans for energy efficiency in Bulgarian Export Insurance Agency. Until now insured loans BGN 9.1 million, as the overall compensations paid under this portfolio are BGN 175 thousand, or 2% of the sum insured. These data suggest strongly that with the help of guarantee schemes with little financial resources substantial financial resources could be mobilized from commercial banks in favour of energy efficiency projects.

3. Market driven energy saving through performance contracting . There are some market driven models for high energy efficiency housing retrofit but there is scope to increase

and adapt these for different markets to encourage growth in higher energy efficiency retrofit. These schemes provide investors with a guarantee of performance therefore providing a lower risk investment that provides an income from the energy saving. These are generally deep retrofits that combine energy efficiency measures whilst completing maintenance of the homes. Examples of this include the schemes in Bulgaria as well as model, Energiesprong, that is used in the Netherlands but is now also being adapted for use in the United Kingdom.

4. **Tradable certificates.** The tradable certificates for energy savings (white certificates for energy efficiency) could be a very flexible market tool to stimulate the high energy performance retrofit of the buildings, which is still rather underestimated by the member states. This mechanism will facilitate the implementation of Article 7 of Directive 2012/27/EU "Each Member State shall set up an energy efficiency obligation scheme. That scheme shall ensure that energy distributors and/or retail energy sales companies that are designated as obligated parties under paragraph 4 operating in each Member State's territory achieve a cumulative end-use energy savings target by 31 December 2020". Residential buildings are obliged parties under the same directive. However, through implementing high standards of energy efficiency measures they will generate certificates for energy savings, which could be sold to the obliged parties or to other market intermediaries at their market price, creating substantial cash-flow. The system of White Certificates has a neutral effect in terms of investment environment. It will stimulate small investors of energy efficiency projects, particularly building projects, such as the achievement of higher energy efficiency levels will provide more white certificates.

5. **Project evaluation and associated costs.**The evaluation of energy efficiency projects should be a mandatory step in the design of energy efficiency measures. This should include simplified methodology for assessing life cycle savings idenfiying what packages would be most effective (increasing energy efficiency and cost savings), such as the EnerPHit Refurbishment Plan, and how this package can be extended with new measures or more qualitative measures, so that the projects come up to higher standards of energy efficiency. Based on this assessment, financing institutions will be able to more easily decide whether to finance the project than if it analyses the creditworthiness of the client only. More upfront loans or grants to assist with this evaluation would assist building owners getting the right advice on the most effective measures to ensure both quality and cost-benefit are adequately addressed.

Technical References

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Project Coordinator	Jan Steiger Passive House Institute, Dr. Wolfgang Feist Rheinstrasse 44/46 D 64283 Darmstadt jan.steiger@passiv.de
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