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FINANCING ENERGY EFFICIENCY: FORGING THE LINK BETWEEN FINANCING AND PROJECT IMPLEMENTATION

Report prepared by the Joint Research Centre of the European Commission

Authors: Silvia Rezessy and Paolo Bertoldi

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Ispra

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1. INTRODUCTION

Energy efficiency is not a single market: it covers measures in a diverse range of end-user sectors, end-use equipment and technologies and consists of very large numbers of small, dispersed projects with a dispersed range of decision makers. Overall, many EE technologies are proven and economic: if properly financed, the investment costs are paid back over short periods from energy cost savings. Yet, projects with compelling economic returns remain unimplemented. Major causes for this gap are the lack of EE finance and delivery mechanisms that suit the specifics of EE projects [1] and the lack – in some markets – of pipelines of bankable energy efficiency projects.

This report focuses on project financing for energy efficiency via financial intermediaries and is structured as follows:

- Section 2 presents the barriers to financing energy efficiency projects;
- Section 3 describes the variety of financial mechanisms common in EE financing, including supplementary public policies and programs and funding from the Structural and Cohesion Funds (SCF). Examples on how financing tools have been applied and outlines limitations and success factors for specific financing mechanisms. The review of financial instruments is not intended as all-inclusive list of all possible financing options, but covers the large majority of those most commonly used for and supportive of EE projects and by EE businesses;
- Section 4 analyses the results of the survey of financing mechanisms for energy efficiency in the Member States and points to some successful and innovative financing schemes. Annex I contains detailed country files of financing for energy efficiency available in all Member States. Annex II reviews financing tools from International Financing Institutions;
- Section 5 presents recommendations.

2. BARRIERS TO THE USE OF FINANCIAL INSTRUMENTS FOR ENERGY SAVINGS

Causes of the capital market gap for EE financing have been well-documented and include [1-4]:

2.1. Market barriers and failures

- High pre-investment development and transaction costs partially due to small size of projects, esp. in the residential sector;
- Information failure on the side of customers: lack of customer awareness and a very high perceived risk of new more efficient technologies by both users and financiers, mistrust in energy audits, benefits initially invisible;
- Information failure on the side of commercial financial institutions (CFIs): general lack of EE finance experience within commercial financial institutions, lack of dedicated time and resources to develop EE capacity and activities in-house;
- Lack of visibility and scale of EE finance: EE projects often represent a relatively small niche business for major banks;
- High perceived end-user credit risks;
- Long marketing cycles associated with selling EE and scarcity of investment ready projects;
- Low collateral asset value of EE equipment and difficulties creating creditworthy financing structures. Collateral value is low because for most EE projects equipment represents a sizeable share of total project cost with high portions of engineering, development and installation costs[1];
- Reluctance or impossibility for property owners to finance projects on-balance sheet;
- Energy savings as revenue is foregone by financiers: cash flows from saving energy are not (yet) conventional revenues in what is still an asset-based culture in financing. This discourages CFIs' entry into this market. Energy cost savings should be incorporated into lenders' analysis of free cash flow and ability of borrowers and end-users to meet debt service payments [1];
- Even where payback periods are short and economic benefits clear, EE projects are often not implemented because of high upfront costs;

[1] EE equipment is highly specific to a certain site or application. High asset specificity implies illiquidity of certain investments, which leads to higher interest rates being required by investors in those investments. Transaction cost economics uses the term “high assets specificity,”, which entails poorer collateral and creates higher risk in that specialized assets cannot be redeployed without sacrifice of productive value (see [5]). Such assets adversely affect the firm’s ability to borrow because firm-specific assets often cannot be redeployed as collateral for borrowing.

- In the private sector (industry and service): budget priorities and thus differentiated treatment of core activity investment and 'auxiliary' investment – such as energy efficiency – in terms of expected PBT. Managers may accept PBT beyond 3 years only for investments in the production area.
- In industry: business interruption due to EE implementation;
- In residential and tertiary: Spilt incentives between building owners and tenants;
- In residential: long payback periods, lack of contractors, small project size and lack of support for holistic retrofits;

2.2. Legal barriers

- Public sector: the rules of public budgeting – including the annual budget cycle and multi-annual savings cash flow – make it difficult for public entities to finance energy efficiency investments from savings in energy costs (similar rules exist in large companies);
- Public sector: local authorities may have to finance energy efficiency investments from their investment budget whereas the resulting savings are credited to the operational budget;
- Residential: ambiguities in the legal standing of apartment owner associations and onerous decision-making due to a large number of decision makers (residential sector);
- Residential and tertiary sectors: uncertainties related to tenant-owner issues and building ownership;
- All sectors: not considering life-cycle costs in procurement (incl. public procurement) decisions;
- Public sector: decentralisation and the energy-related statutory tasks of local authorities, ambiguous ownership and operation of major energy assets (DH and public lighting systems), inability of local authorities to retain the monetary savings due to efficiency improvements[2];
- Burdensome procedures of issuing e.g. permits or construction notifications (e.g. for refurbishment);

In 2006 KfW Bankengruppe published the results of a survey[3] looking into enabling and disabling factors for corporate EE, which shows the constraint on implementing corporate EE measures most frequently cited by the enterprises is the need to allocate available funds for more important investments so that capital is lacking for energy savings (47%). Enterprises often lack the necessary capital to be able to carry out investment measures (39%), smaller enterprises in particular. Among the 5 most common hampering factors for corporate EE enterprises also cited lack of time and heavy workload (38%), overlong payback periods for EE investment measures (34%) and lack of knowledge about manufacturers of energy saving equipment (28%). Three-quarters of companies said they assigned no special personnel for energy issues and only dealt

[2] If the energy costs are reduced through EPC the total budget of the local authority will also decrease, which affects the incentives for the public authorities to use less energy are missing.

[3] Undertaken in June-July 2005, the survey targeted about 4,100 enterprises that had received a development loan from KfW in the last five years. Of the enterprises sent the survey questions, 521 answered, which amounts to a feedback ratio of almost 13%. The respondents were principally SMEs. At about 42%, the majority of enterprises came from the manufacturing sector, followed by the service sector, accounting for 27% of respondents.

with questions of reducing energy consumption and energy costs as part of their normal management and procurement activities [6].

The survey shows that across all the various turnover sizes, own resources provide the major source of finance for energy saving investments. 79% of enterprises said they allocated their own resources. 42% of enterprises also financed their investments with the help of asset-based bank loans. Considerably more smaller enterprises used borrowed funds than larger ones, an indication that smaller enterprises in particular have to resort to external funds to finance energy-saving investments for lack of own finances. Alternative finance instruments, such as contracting, only played a subordinate role in the enterprises surveyed, especially in industry [6].

Public funding is very important for enterprises to finance energy saving investments. 39% have availed themselves of current assistance programmes (central government, federal states, EU, etc.), smaller enterprises much more frequently than larger ones [6].

3. FINANCIAL INSTRUMENTS FOR ENERGY EFFICIENCY

Because different EE technologies and different types of organisations require distinct types of finance depending on their particular stage of development, financial instruments are needed along the entire finance continuum from technology/venture/project development to construction and commercial operation [7]. The primary financing options[4] available for project proponents to finance EE projects are via internal funding through capital budgets, debt financing (mostly loans and lease) and via energy performance contracts (shared and guaranteed savings)[5].

In Section 3 we look at the nature of financial instruments - debt, equity, subordinated debt and other instruments - introduced to address specific gaps in financing for energy efficiency and provide brief examples how each of these have been used to finance energy efficiency.

Section 4 analyses the results of the survey of financing mechanisms for energy efficiency in the Member States and points to some successful and innovative financing schemes, while Annex I contains detailed country files on financing for energy efficiency available in all Member States. Policies that leverage increased investment are considered too, such as financial incentives (grants, production or user tax credits, rebates, white certificate schemes, etc.), as well as funding from the Structural and Cohesion Funds (SCF) and via the European Investment Bank (EIB).

3.1. Debt financing

Debt financing refers to the acquisition of funds by borrowing: a lender provides capital to borrower for a defined purpose over a fixed period of time. Debt options include corporate or project loans under recourse or limited recourse structures, leasing arrangements and full or limited guarantees. Debt financing can include options whereby loans convert to some amount of equity ownership if the project is successful, to increase lenders' rate of return [8]. Further, general corporate capital market activities include sourcing bank debt for general corporate purposes or issuing bonds.

The most common EE financial product is a loan directly to the energy end-user (owner of the premises) or to a project developer (e.g. an ESCO) – this is known as third-party financing[6]. A basic loan is the simplest form of debt: it is an agreement to lend a principal sum for a fixed period of time, to be repaid by a certain date and – in commercial loans – with an interest calculated as percentage of the principal sum per year and other transaction costs (e.g. administration fees). Most CFIs offer term lending for plants and equipment, while some have leasing units and structured finance and project finance capacities and thus may already be doing lending similar to that required for EE projects [1].

Financing with recourse implies that the company stands behind the project or venture and the related debt and the financiers have to recognise the company's assets in the event of default. The debt holder then reports the loan on its balance sheet as liability – hence the terms corporate financing or 'on balance sheet' financing. Businesses are often willing to use recourse finance only for core business activity business and not for projects in auxiliary activities, such as energy efficiency.

[4] There are different ways to group financing mechanisms: for example depending on the nature of the financial instrument (e.g. debt, equity) or the type of beneficiary or the source of financing (public, private, etc.).

[5] For energy performance contracting, see the ESCO status reports 2005 and 2007 prepared by the JRC. A new status report is currently in preparation and is expected to be published in 2010.

[6] The financing does not come from the internal source of neither the end-user (owner of the installation) or the ESCO, but from a third party.

In contrast, limited recourse financing – sometimes known as project finance (for details see section 3.4) or cash-flow related funding – refers to transactions whereby the project is financed largely based on its own merits. Project finance is long-term financing based upon the projected cash flows of the project rather than the balance sheets of the project sponsors.[1] The financing is typically secured by all of the project assets, including the revenue-producing contracts. Project lenders are given a lien on all of these assets, and are able to assume control of a project if the project company has difficulties complying with the loan terms.

In project finance financiers have recourse to the project's cash flow and assets or additional collateral as securitisation. When making a secured loan, banks evaluate both the quality of the borrower and the collateral. Because smaller companies may not have sufficient internally generated cash flow or the debt capacity to borrow easily for general corporate purposes, they often turn to secured debt by offering collateral such as inventory and receivables or property, plant, equipment, or sometimes a bank letter of credit. Pledging collateral[7] may allow such companies obtain bank loans when they would not normally qualify for unsecured loans[8]. The collateral is used to reduce a bank's loss in the event of a default on the loan.

ESCO financing structures can employ project finance type of limited recourse debt, usually with additional collateral or credit support needed.

In EE project financing above a certain threshold there are two common models of third-party financing. One is direct lending to the end-user (with or without an ESCO performance guarantee) and another is lending to the ESCO. When the end-user is the borrower, then end-user credit risks are separated from project performance and project technical risks: the FI assumes the end-user credit risk, while all technical and performance matters are addressed between the ESCO and the end-user. The loan is on the balance sheet of the end-user. Loan financing can be combined with savings guarantees from the contractor.

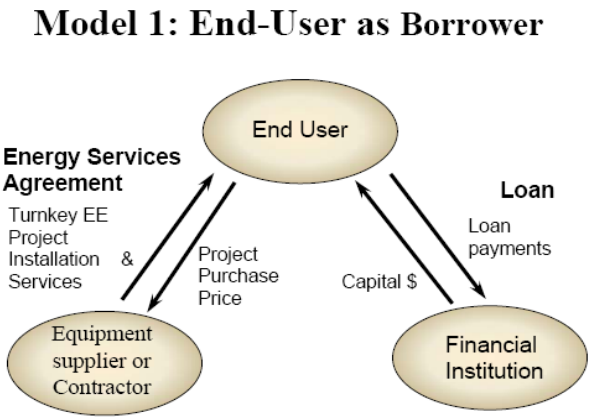
When the ESCO borrows, it effectively packages together financing with turnkey project implementation and services agreement. In this case the financier has to evaluate not only the end-user credit risk, but also project economics, project engineering and technical performance, ESCO financials and equity contribution, ESCO management and performance track record, and all project contracts including the Energy Services Agreement [1]. The loan is on the balance sheet of the ESCO and the ESCO is exposed to the end-user credit risk.

Figure 1 and Figure 2 summarise the contractual relationship in the two models – with end-user as borrower and with ESCO as borrower. Project financing – notably via the special purpose vehicle model – is discussed in section 3.4, which also illustrates the concept with a figure and presents an example with cogeneration.

[7] Quality of collateral is judged by the value of the asset being pledged and the consistency of that value over time, as well as the ease with which it can be liquidated including the cost to reposition the asset and general market demand for the asset category [9]

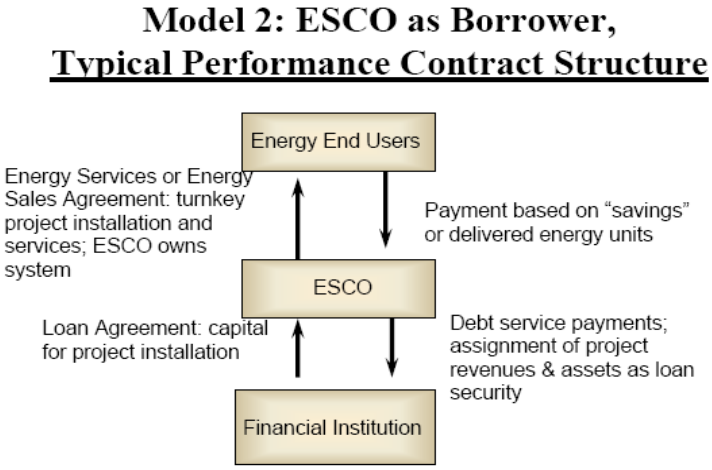
[8] There are numerous techniques for securing EE equipment and project loans to end-users, including preferred drawing rights and special escrow accounts, reserve funds, security interest in equipment and project, recourse to equipment vendor, collections via utility bills or property taxes, extra collateral from the borrower, guarantees and credit enhancement programs [1].

Figure 1. Financing model 1: end-user as borrower



Source: [10]

Figure 2. Financing model 2: ESCO as borrower



Two alternatives to Model 2:

- Bank Loan to ESCO; with Matching Fixed Payments from End-User
- ESCO Loan to End-User; ESCO sells this payment stream to Bank, Factoring or Forfeiting

Source: [10]

Further debt instruments include *syndicated loans* - granted to companies that wish to borrow more money than a single lender is prepared to lend in a single loan with a syndicate of banks each lending a portion of the principal sum – and *bonds*, which are debt securities issued by companies or governments with a fixed lifetime and entitling the holder to the repayment of the principal plus interest (repaid at the end or in regular instalments during the lifetime of the bond).

A bond is a debt security, in which the authorized issuer owes the holders a debt and, depending on the terms of the bond, is obliged to pay interest (coupon) and/or to repay the principal at a later date, termed maturity. Thus the *issuer* is the borrower (debtor), the *holder* is the lender (creditor), and the *coupon* is the interest.

An example of bond financing relevant to energy efficiency is issuing municipal bonds in procuring funding for municipal energy efficiency. The city of Varna in Bulgaria issued municipal bonds to obtain financing for an EE project involving retrofit and modernization of the city's street lighting. The bonds raised 3 million Euro, and the simple payback of the project was 2 years and 9 months. The municipality collected relatively high volumes of financing by issuing general obligation bonds at 9%. Repayment of the bonds was done in three equal portions during a three year period, primarily as revenue bond emission through the savings. Six other cities participated in issuing bonds to raise funding for their projects.

An innovative financing option is forfeiting[9], which is a form of transfer of future receivables from one party (cessionary – an ESCO) to another (buyer – a FI). The original creditor (the ESCO) cedes his claims and the new creditor (the FI) gains the right to claim future receivables from the debtor (the client). The ESCO sells future receivables to an FI in return for a discounted one-time payment. A cession of future receivables is not a stand-alone financing option, but can serve as additional collateral for the FI [11].

With forfeiting the ESCO originates transaction as extended trade payments and sells *long-term receivables to a bank* which assumes the credit risk (see assignment of project revenues on Figure 2). In a forfeiting transaction the ESCO or equipment vendor assigns - via an Assignment Agreement - future receivables (e.g. the end-user payments) from an Energy Service Agreement to a lender together with pledge of assets. The end-user pays directly to the bank; the payments are used to amortise the ESCO debt. If an ESCO is involved, the end user, the ESCO and the lender also sign a "Notice and Acknowledgment of Assignment" where the end user acknowledges the terms of the Assignment Agreement and further agrees not to set-off any future claims. Under an Energy Services Agreement the ESCO provides performance guarantee, while the end user pays fixed monthly payment to amortize the investment. All the technology installed is pledged to ESCO. ESCO performs maintenance of the system and the end user pays fixed monthly payment for this service under a separate Maintenance Agreement [12].

3.1.1. Risk transfer and risk sharing tools

Debt financing for EE projects will almost always require some form of guarantee mechanism. In some rare cases the project developer – i.e. a large and well-established ESCO or a large end-user – as a company may have a sufficiently strong balance sheet (supported by equity) and strong income statements from other business activities that can be used against the loan. Even in this case end-users may prefer to tie their balance sheets with financing core business activities only.

International risk management obligations require commercial banks and leasing companies to demand assets as collateral for loans that are often not available to sustainable energy ventures.

[9] Factoring is a similar form of cession of a bundle of receivables of goods and service deliveries with a short-term payment target and/or the cession of single invoices. Factoring mainly transfers the collection of payments and in the case of non recourse also of financial risks to a specialized FI. Factoring is not applicable for long-term contract durations.

This is why guarantee programs – or any form of publically backed guarantees – are crucial to ensure that end-users and ESCOs are able to access affordable debt financing [13].

Risks are an inherent feature of financial transactions; thus guarantees can be applied in all phases of the finance continuum to improve access to and the terms of financial products that would be under-supplied without guarantees. The product in need of guarantee can be risk capital (equity or mezzanine finance, bank credits, bonds or security issues or letters of credit). This report looks at guarantees for bank credits as the most common form related to EE financing [14].

Development Financial Institutions (DFIs[10]) are capable of assuming risk and mobilising substantial public or donor funds. Because EE projects are usually too small for DFIs to finance directly, DFIs can support local CFIs to provide EE financing via the provision of tools such as

- credit lines for on-lending to EE projects,
- mezzanine debt facilities (see section 3.3),
- guarantees and risk sharing facility programs, and
- supporting technical assistance.

Risk sharing mechanisms can be a solution when a domestic financial system does not face liquidity constraints, but financial intermediaries are reluctant to lend to EE projects because of high perceived risks [1] [7] [15]. Risks are often perceived initially to be high by local banks that are unfamiliar with energy efficiency business concepts or specialized means to mitigate those risks. There are different types of risk sharing mechanisms, such as partial loan guarantees and loan reserve funds.

Guarantees are contracts interlocking three parties. With partial credit guarantees the contracts are between lender and borrower (loan agreement) and between guarantor and lender (guarantee agreement). In partial risk guarantees the contracts are between guarantor and investor/lender and between guarantor and host country government [14]. Typical guarantee structures include pari passu partial guarantees, subordinated recovery guarantees, portfolio first loss and second loss guarantees and pro rata loss basis, loss reserves acting like first loss guarantees, and liquidity support guarantees[11].

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10 DFIs can be multilateral banks (e.g. the World Bank, IFC, EBRD, etc.) or national development banks (public banks, such as the KfW) or even sub-national development banks.

11 Partial parity guarantee programs involve placement of grant funds into a reserve account used to provide partial credit guarantees clearing part of the risks of loan repayment for energy efficiency loans [16]. A parity guarantee means that the guarantor ranks equally with other lenders in recovery of funds; the guarantee is partial because any losses are shared in agreed proportions. The instrument also may provide a useful platform for delivery of a broad package of assistance to financial intermediaries [3]. Subordinated recovery guarantees imply that the guarantor ranks behind other lenders in recovery of the guarantee funds it paid out in case the borrower defaults on the loan. A subordinated guarantee is more valuable to lenders and they can be expected to lower interest rates etc. more with this provision. A subordination provision can be used when interest rates are extremely high, due to higher perceived risk, for example if a new technology being used. In the case of loan loss reserve funds – considered as an alternative to portfolio guarantees – grant funds are deposited with a bank or banks to provide full or partial coverage for a loan portfolio. No guarantor is required. This approach is better suited for smaller, residential loans where individual guarantees would be too costly. The participating banks may provide part of the reserve together with the source of grant funds, with a specified default level above which the bank bears all additional losses. As with guarantees, this approach is best suited for developed and liquid banking sectors where banks are willing to take some risks. Since it is better suited for a portfolio of small, standard loans, it should be accompanied by technical assistance to support preparation of standardized applications and appraisal methods [16].
A preferred drawing right agreement or provision is included in the loan documentation whereby the borrower agrees that the lender is paid automatically at a defined payment date each payment period (monthly, quarterly) and this amount is automatically withdrawn from the borrower's primary bank account. A common project finance technique is to establish dedicated reserves for debt service, repair and replacement of equipment or other purposes. Security interest protects lenders' interest in a way that if a borrower defaults, a security interest in equipment may also allow a lender to deny access to or use of equipment even if it is not repossessed [1].

Depending on the degree of guarantor's involvement in the loan approval process, there are individual guarantees and portfolio guarantees. In an individual guarantee scheme the guarantor is heavily involved in each individual transaction, appraising the eligibility of the applicant borrower for the guarantee in parallel with the primary lender's due diligence to establish eligibility for a loan. A portfolio guarantee guarantees all loans by the primary lender to a class of borrowers.

As an example of the application guarantees in EE financing, the Bulgarian Energy Efficiency Fund (BEEF) offers partial credit guarantees (80% on a parri passu basis and 50% on first loss basis), as well as portfolio guarantees for ESCOs and for the residential sector. The ESCO portfolio guarantee covers up to 5% of defaults of the delayed payments of an ESCO portfolio; with this guarantee an ESCO can get better interest rates on its debt with commercial banks. Since delays in payments are more probable than default of clients, the BEEF acts as financial buffer to take the shocks. For the residential guarantee BEEF helps the households in a building to develop a good project; a company is then selected to implement the investment. The bank gives the funds to the project developer, but the repayments afterwards come from the individual households. Each household pays proportionately to their built-up area. BEEF guarantees that it will cover the first 5% of defaults within this block (or portfolio of blocks). This product is being developed as a partnership with commercial banks.

Other examples include guarantee programs provided by development and public banks – for instance KfW in Germany, the Czech Guarantee and Development Bank in the Czech Republic, KredEx in Estonia, BPME and Ademe (the Fogime guarantee scheme) in France, the Bank for Environmental Protection in Poland (see country files in Annex I). The State Support Programme for the Housing Stock Renewal through the Granting of Bank Guarantees for Loans in Slovakia involves granting of bank guarantees for loans, which enable wider utilisation of bank resources in financing of housing stock reconstructions, thus starting faster renewal and ensuring public fund leverage. A number of financing instruments at EU level can be used to implement guarantee schemes (see section 3.7).

At national level governments can choose to guarantee loans used in order to implement measures to improve the energy efficiency. For example residential efficiency loan guarantees could work similar to the way some governments guarantee student loans. The government guaranteeing loans for improved energy performance homes would boost energy efficiency because it reduces the risk to the lender, which leads to reduced risk results in lower interest rates and not having a requirement for mortgage insurance.

Energy Savings Insurance (ESI) is a formal insurance contract between an insurer and either the building owner or third-party provider of energy services. In exchange for a premium, the insurer agrees to pay any shortfall in energy savings below a pre-agreed baseline, less a deductible. Pricing is typically expressed as a percentage of energy savings over the life of the contract, although it is sometimes expressed as a percentage of project cost. The premium is paid once, in the first year of operation. Such policies are non-cancellable, so the owner is guaranteed to have access to the insurance for the originally agreed contract term. Energy saving insurances typically insures annual savings expectations (a "volumetric" approach). Energy-savings insurance can reduce the net cost of energy-saving projects by reducing the interest rates charged by lenders, and by increasing the level of savings through quality control [17]. Unlike guarantee – which is a three-party contract – an insurance is a two-party contract between the insurer and the insured; for the insured insurance operates very similarly to risk guarantee.

ESI is widely practiced in Canada and in the US; in Europe the global market of risk transfer is slowly growing up, but insurance products such as ESI are still limited. In the US several insurance companies already offer ESI, which traditionally has been used to guarantee power reductions at retrofitted buildings. State governments have led ESI efforts, with several requiring such insurance from firms that provide energy management services in state-owned facilities.

3.1.2. Leasing

Leasing is a common way of dealing with the initial cost barrier [18]. Leasing is a way of obtaining the right to use an asset (rather than the possession of this asset). In many markets finance leasing can be used for EE equipment, even when the equipment lacks collateral value. Leasing companies, often bank subsidiaries, have experience with vendor finance programs and other forms of equipment finance that are analogous to EE [1].

From the lessee's standpoint, there are essentially two main types of leases: capital lease and operating lease. Under a capital lease a lessee is required to show the leased equipment as an asset and the present value of lease payments as debt on its balance sheet. Operating leases are not capitalized on a company's balance sheet and lease payments are treated as an expense for accounting purposes [9]. The period of contract is less than the life of the equipment and the lessor (investor) pays all maintenance and servicing costs.

Leasing is the most common form of equipment manufacturers' vendor financing, which is often applied in the case of CHP equipment. Leasing is often done as part of a special purpose vehicle (SPV) (see section 3.4).

3.1.3. Debt financing for energy efficiency: summary of limitation and success factors

Generally all debt financing options can be used for implementing EE projects. While the direct comparison of debt financing options is very much dependent upon the specific characteristics of the project and the project proponent with an in-depth analysis needed of all business implications, this section points to some limitations of some debt financing options and emphasises some success factors.

<u>Limitations of recourse financing and project financing</u>

Often customers wish to base debt service on the project cash flow, which requires adequate understanding of EE projects by FIs. On the other hand, because cash flows from saving energy are not (yet) conventional revenues in what is still an asset-based culture in financing, debt financing for EE is often based on the debtors creditworthiness (recourse financing) or additional collateral is required as securitisation in addition to the project's cash flow. The former option is often non accessible for the residential sector, while many large industrial and commercial businesses only keep corporate financing based on debtors creditworthiness for core activities solely.

The limitation of this financing model is the low value of collateral in a EE project: once EE equipment is installed at the end user's facilities, it is often difficult and uneconomic to remove and use elsewhere (e.g. lighting or motors). Thus, often EE equipment has a low collateral asset value while representing a sizeable share of total project cost with high portions of engineering, development and installation costs. This is why often EE project lending is frequently not based on the equipment asset value solely, but on the creditworthiness of the borrower (recourse financing/corporate financing) [1] or additional securitisation is required. In addition, as pointed out in section 2, energy cost savings are often not incorporated into lenders' analysis of free cash flow and ability of borrowers and end-users to meet debt service payments [1]. Finally, project financing ties up the balance sheet of a company and limits its future borrowing capacity.

<u>Solutions provided by guarantees</u>

Risk sharing mechanisms – such as partial risk guarantees – provide collateral from external partners for part of the debt of projects. Partial risk guarantees can boast EE financing when

domestic financial systems do not face liquidity constraints, but financial intermediaries are reluctant to lend to EE projects because of high perceived risks.

Guarantees can help bridge the gap between the perceived credit risks, as reflected in credit underwriting practices, and actual credit risks, thus assisting beneficiaries in providing them access to finance, reducing their cost of capital, and expanding loan tenor or grace periods to match project cash flows[14]. Guarantees thus can address the credit risk barrier common in many EE market segments and make local FIs more comfortable with the risk.

Partial-risk loan guarantee programs have shown some success in recent years in jump-starting energy efficiency financing programs through local FIs (see the Commercial Energy Efficiency Finance program of the IFC). They can act to extend the loan repayment period and decrease the interest level, thus improving projects' cash flow and viability. They can also increase debt-to-equity ratios, enhancing returns to developers [19]

Publicly backed guarantees[12] and insurance schemes can use risk mitigation to steer the flow of private funds towards EE projects [14], thus leveraging private financing at times of squeezed budgets across the EU. Publicly backed guarantee schemes have been used in project finance and asset finance[13].

In project finance publicly backed guarantees can support the implementation of large-scale projects with above-average project risks, accelerate investment in infrastructure and solve specific debt and equity finance problems in small scale project finance.

In asset finance publicly backed guarantees enable aggregation and standardisation of small-scale EE loans to end-users, as well as the financing of EE investments by ESCOs and low-income households. In asset finance guarantees can help bring down bank costs of transactions in dealing with mass requests for end-user finance.

Portfolio guarantees can assume part of the financial risk of the ESCO related to revenue streams: because ESCOs or other energy service providers rely strongly on debt financing, they need precisely budgeted and timed revenue money flows in order to service their debt. Delays or defaults in payments on the side of their clients may have serious impacts on the servicing of debts of the ESCO itself.

Yet, guarantee funds cannot be used as a stand-alone solution and are not appropriate for all market situations: for instance, they are of no or limited use where the main financing challenge is bank liquidity. In markets where financial institutions have sufficient liquidity, but low appetite for risk, guarantees should be examined as a mechanism within a larger program [13].

Partial credit guarantee schemes are not an effective instrument to attract a CFI loan to a project, when the investors' equity is insufficient to comply with the minimum equity requirement for eligibility. A complementary instrument is needed in this case, such as subordinated debt or equity, which can substitute for and reduce the amount of senior debt and close an existing equity gap [14].

To mobilize EE investment where there is lack of EE lending experience and limited FI knowledge of EE, there is a need of not only support via credit enhancement financial products, but of technical assistance for financial product development and marketing and aggregating the market (project pipeline) as well.

Solutions provided by leasing structures

[12] Partial credit guarantees and partial risk guarantees.
[13] See [14] for further details on public backed guarantees in business finance and technology transfer.

Leasing is a suitable option for projects where physical assets - rather than labour or services - form the greater bulk of the expenditure, and where continued use of the asset may be denied the ultimate owner in the event of default. Because the transaction costs involved in leasing on a small scale would be high and there would be greater risk for the lender and cost for the borrower, leasing is not suitable for projects with a low component of physical assets, such as small-scale retrofitting projects in buildings [18]. Leasing works best with simple equipment and large quantities of sales or installations.

Leasing FIs are generally more prone to base debt service on project cash flow. On the other hand lessors generally require comprehensive insurance package and operation and maintenance guarantees for equipment, which implies additional cost for borrower [20].

Solutions provided by other debt financing instruments

Funding for municipal energy efficiency via municipal bonds can be done by municipalities with size significant enough to attract the attention of investors. Issuing municipal bonds requires lengthy and expensive preparatory work that consists of analyzing and forecasting the municipality's financial resources, and launching a procedure for obtaining a credit rating from an international credit agency. The municipality also needs to define bond emission parameters and prepare an Investment Memorandum [21].

The downside to bond financing for municipal energy efficiency is that benefits from the project accrue over time, usually 5-10 years, while repayment of principal on the bonds has to occur simultaneously at maturity. This can create cash-flow issues for the municipalities if bonds' maturity date is not correlated to the financial savings from the energy efficiency project. Bond financing is beneficial when the revenue from bond issuance is eligible for tax breaks or tax exemptions [21].

Forfeiting is a suitable opportunity for immediate flow of cash for financing an EE project. The development of forfeiting can be advantageous if the cash flow can serve as main collateral. A pre-condition for forfeiting is the legal rightfulness of the receivables – e.g. the ESCO has to perform the energy performance contract and deliver the savings guaranteed. Generally the ceded receivables must be from investment, goods or service deliveries with a mid-term duration of 6 months to 5 years or longer, which is applicable to future receivables. Forfeiting is expected to be economically advantageous if the client's creditworthiness is better than this of the ESCO or if the project cash flow could serve as main collateral [11]. From the ESCO perspective it is desirable that the FI assumes certain risks, such as the financial performance risk of the client. In this context non recourse means that the FI waives the right to resort back to the ESCO, provided that the ESCO has fulfilled the contractual obligation including the savings guarantee of the EPC [11]. The transaction costs of setting a forfeiting contract – not a standard financing product to date – may be high.

3.2. Equity financing

Equity financing refers to the acquisition of funds by issuing shares of common or preferred stock in anticipation of income from dividends and capital gain as the value of stock rises[14]. It also sometimes refers to the acquisition of equity in private unlisted companies or start-up companies. Equity is the residual claim or interest of the most junior class of investors in an asset, after all liabilities are paid: ownership equity is the last (residual) claim against assets, paid only after all

[14] Ownership equity includes preferred stock; share capital, common stock; capital surplus; stock options; retained earnings; treasure stock, etc.

other creditors are paid. Ownership equity is also known as risk capital or liable capital. The equity held by private individuals is often held via mutual funds or other forms of pooled investment vehicles: unless the sponsor is a large company, this equity is typically supplied by private equity funds.

Equity financing can come from professional venture capitalists. Venture capital (VC) is a specific sub-segment of private equity investment, which entails investing in start-up companies with strong growth potential; private equity entails investment in the expansion and growth of any company that is not listed on a public stock exchange. VC investors obtain equity shares in the companies that provide EE goods or services and generally play a significant role in the management and technical aspects of the company. VC investments in technology innovation must also meet investment exit expectations. Without clear exit paths, typically through re-sale or initial public offerings (IPOs), VC investors cannot easily commit to the deal, even when they are convinced of the investment potential [7].

Private equity is essential for growing businesses that want to expand their activities, as well as for large-scale project developers. Several public agencies and funds have developed finance mechanisms that provide equity investment opportunities for sustainable energy businesses and projects, often leveraging large amounts of investment from other private financing sources [7].

With respect to energy efficiency businesses, equity investment can take the form of an ESCO issuing additional shares in the company's common ownership. The issuance of shares gives the investor a right to any proceeds that may result from a distribution of dividends to the owners or cash proceeds from any sales of the assets of the company after the satisfaction of any outstanding liabilities [13].

While private equity funds are not very typical in energy efficiency, an example of equity fund in the field of sustainable energy is the Marguerite Fund. This is a pan-European infrastructure fund for long-term institutional investors to finance the implementation of strategic European policy objectives and projects in the transport, energy, climate and renewables sectors.

The Marguerite Fund provides equity to energy and infrastructure projects with a focus on greenfield investments which are not sufficiently served by other investment funds. The expected total fund size is 1.5 billion Euro in total equity. The Core Sponsors – which now count public long-term investors from almost all the largest EU member states (France, Italy, Germany, Spain and Poland[15]) – plan to obtain a Fund in the order of 750 million Euro of which each Core Sponsor has committed to investing 100 million Euro. In order to reach the 1.5 billion Euro target, the Fund needs to attract private investors, which should provide a key contribution in the context of subsequent closings of the Fund. In addition, the presence of private investors will promote an innovative form of public-private partnership dedicated to long-term investment in infrastructure sectors. The Fund will have a target life time of not less than 20 years with a target investment period of four years from the final closing. The EU is working to give a direct investment of 80 million Euro from the budget of the trans-European network projects under the TEN Regulation. The Marguerite fund is set up as a closed-end investment company established as a regulated SICAV-FIS under Luxembourgish law.

Marguerite will provide equity or quasi equity to companies that own or operate infrastructure in the sectors of transport (in particular TEN-T), energy (in particular TEN-E), and Renewable Energies, including sustainable energy production, clean transport infrastructure, energy distribution and systems for hybrid transport, geothermal, biomass, biogas, hydro, waste-to-energy projects. The fund is intended to be fully invested in four years. It will focus on asset

[15] The EIB, Caisse des Dépôts et Consignations (CDC), Cassa Depositi e Prestiti (CDP), Kreditanstalt für Wiederaufbau (KfW), Instituto de Credito Oficial (ICO), and Powszechna Kasa Osz•dno•ci (PKO)

creation. The investors in the fund and other long-term credit institutions intend to establish a debt co-financing initiative of up to 5 billion Euro, providing a source of long-term debt for the projects that the Marguerite Fund invests in[16]. While this fund does not target energy efficiency, its structure can be used as a model for a similar financing instrument for energy efficiency.

3.2.1. Equity financing in energy efficiency: summary of limitation and success factors

As already indicated, private equity is essential for growing businesses to expand their activities. As the industry grows and financiers become more familiar with EE, equity will play an increasing role. Equity leverages debt investment and is crucial for industry growth.

ESCOs require equity for capital-intensive EE projects, where costs of large transactions affect negatively debt investment options and profitability. ESCOs can use their equity for collateral for large loans, but the equity is not made available to be put back on the books until revenue comes in through savings or service payments and loans are repaid in full[17].

Thus equity funds can assist EE businesses, such as ESCOs, in generating sufficient capital to support early development costs. By separating the risk of the project from the risk of the ESCO as a venture, equity provides the ESCO with cash position on its books and improves its balance sheet by improving cash flow after debt payments. In some mature ESCO markets the private sector is investing equity in ESCO ventures.

While equity investments put ESCOs in better cash position, improving its leveraging power vis-à-vis debt lenders in order to finance project implementation, ESCOs may be wary of equity because it means giving up some control and is thus seen as an expensive solution [13].

3.3. Subordinated Debt financing (mezzanine finance)

Subordinated debt financing, sometimes called Mezzanine Financing, is capital that sits midway between senior debt and equity and has features of both kinds of financing. Subordination refers to the order or priority of repayments: subordinated debt is structured so that it is repaid from project revenues after all operating costs and senior debt service has been paid. There are much fewer sources of Subordinated Debt than there are of senior debt or equity, so it is often considered to be specialty financing.

Subordinated debt is substantially more risky than senior debt since it is generally subordinate to senior debt in terms of collateral rights and rights to cash flow. Subordinated debt financing is generally made available directly from insurance companies, subordinated debt funds, or finance companies. Alternatively, it is raised with public offerings of high-yield bonds to institutional investors. These funds are loaned based on the amount and predictability of cash flow exceeding that required to service senior debt. Because subordinated debt usually has little collateral protection, the lending institution may be granted stock options to own equity of the outstanding stock.

Subordinated debt funds can be undertaken in partnership with senior lenders. Alternatively, a subordinated credit facility can be provided to the CFI which acts as senior lender; the senior lender then on-lends to the project, blending together the subordinated debt together with its

[16] http://www.europolitics.info/sectorial-policies/eu-launches-600-mn-euro-marguerite-fund-art256730-17.html

[17] That implies that in the meantime ESCOs may not be able to pursue new business development or project expansion because they will not qualify for financing.

senior debt provided from its own resources. The borrower sees one single loan, but the senior lender applies loan payments to repay the senior debt component on a priority basis [22].

Furthermore, concessional funds could be blended with DFI funds, and provided on a "first loss" basis, thereby improving the DFI's risk position on the subordinated loan facility. The concessional funder would be supporting and leveraging the subordinated debt which in turn supports and leverages the senior debt. This concept has been applied by the EU's Patient Capital initiative and by the ADEME. This funding can also be combined with TA funding that can assist the sub-debt fund and/or its partner senior lenders to market and prepare projects for investment, including aggregated investment programmes [22].

3.3.1. Subordinated debt financing and energy efficiency: summary of limitations and success factors

For sustainable energy project developers, subordinated debt financing is cheaper than what would be available on the equity market, does not usually involve sacrificing any control of the company and can allow companies to raise sufficient capital to meet the debt-equity requirements of senior lenders.

Subordinated debt is considered as a complementary or alternative solution to portfolio guarantees. It can substitute or reduce the amount of senior debt. This will improve the loan-to-value ratio and the debt service coverage ratio for the senior lender, thereby reducing risk and strengthening the project's financial structure from the senior lender's viewpoint [1].

Subordinated debt instruments can be extended out for 6-12 years, providing a more 'patient' capital investment option. They have proved to be most successful when operating in mid- to well-developed capital markets where equity and debt instruments are well established. Given that subordinated debt finance can be regarded as a hybrid of debt and equity, it can improve a company's credit rating and put it in a better position to acquire further debt and equity investment. Because of the high return requirements, mezzanine finance instruments mostly address companies with stable cash flows and high growth expectations [7].

3.4. Project financing

Unlike conventional debt financing that relies on an individual company's credit-worthiness, project financing relies on a project's cash flow expectations and spreads the risk between the different actors [18]. As already indicated, third-party financing can be sought by an end-user engaging in financing the project directly, or by an ESCO or similar entity that executes the project. Projects initiated by ESCOs are largely project-financed and off the balance sheet of the company. Importantly, project finance is often based upon a complex financial structure where project debt and equity are used to finance a project, rather than the balance sheets of project sponsors.

Usually, a project financing structure involves a number of equity investors, as well as a syndicate of banks that provide loans to the operation. The loans are most commonly non-recourse loans, which are secured by the project assets and paid entirely from project cash flow, rather than from the general assets or creditworthiness of the project sponsors, a decision in part supported by financial modeling.

The ratio of debt to equity is much higher in project finance than in 'on balance sheet' corporate financing: as indicated, a project with 70- 80% debt and 20-30% equity is common in project financing. Compared to on balance sheet finance, banks will usually be willing to extend the length of the project finance loans to almost 15 years because they have much more control over the project. Another particularity of project financing is that it transfers the risk away from the

financiers and spreads it amongst the different actors. Through contracting and because risk is divided between the different sponsors of the project, project financing ensures that there are different outcomes in case of non-payment [18].

A Special Purpose Vehicle (SPV) – also referred to as Special Purpose Entity – is a firm or other legal entity established to perform some narrowly-defined or temporary purpose, which facilitates off-balance sheet financing of projects. SPVs are used in a variety of transactions, including securitizations, project finance, and leasing. An SPV can take various legal forms, including corporations or partnerships. A standard approach is to form a SPV and place assets and liabilities on its balance sheet. The investors (a.k.a. sponsoring firms) accomplish the purpose for which an SPV has been set up – for example implementing a large EE project – without having to carry any of the associated assets or liabilities on its own balance sheet.

3.4.1. Project financing: summary of limitations and success factors

Because a typical project finance structure includes a wide array of contracts between the different actors that transfers the risk and allows an adequate risk coverage and division, project financing is associated with large transaction costs and intricacies that imply a very high threshold investment price [18], typically above 10 million Euro.

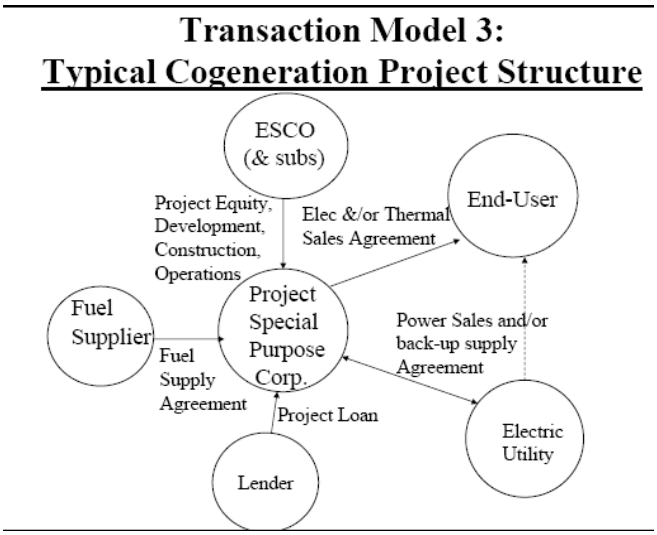
EE finance marketing will prosper where lenders can make credit decisions on the basis of free cash flow and ability to pay and also include a prudent portion, e.g., 70%, of estimated energy cost savings in these calculations. Many DFI finance programs offering guarantees emphasize this point: to assist the partner FIs to create secure transactions while requiring less extra collateral from borrowers, and instead, underwrite the loans based on the project's benefit stream and the borrower's ability to pay.

Off-balance sheet financing is attractive from a risk management standpoint. When assets and liabilities are moved from one balance sheet to another, the risks associated with those assets and liabilities go with them. Off-balance sheet financing also affords considerable flexibility in financing. Most importantly from the standpoint of EE project financing, an SPV does not utilize the sponsoring firm's credit lines or other financing channels. An SPV is presented to financiers as a stand-alone entity with its own risk-reward characteristics. It can issue its own debt or establish its own lines of credit. Often, a sponsoring firm overcapitalizes an SPV or supplies it with credit enhancement. In this circumstance, the SPV may have a higher credit rating than the sponsoring firm, and it will achieve a lower cost of funding .

Cogeneration projects are often implemented by ESCOs and frequently structured through an SPV setup by investors. The sponsor establishes a SPV with the objective to own and operate a cogeneration system. Assets of the company are represented by the co-generator facilities, and investment return is assured by two revenue streams: one is heat sales to end-user companies (approx. 10-20%) and the other is electricity sales to the grid (approx. 80-90%), sometimes based on a preferential CHP feed-in tariff. Borrower is the SPV.

Figure 3 illustrates the contractual relationships involved in a SPV as a type of non-recourse project financing.

Figure 3. Project financing: special purpose vehicle



Source: [22]

3.5. Other financing mechanisms: developing EE financial products and creating demand for EE finance

This section reviews other financing mechanisms and supporting tools that may be applied in energy efficiency venture or project financing.

Because equipment finance increases the vendor's sales and profits, the equipment vendor has an interest in supporting the financing. This can be in the form of direct recourse, limited or partial recourse, or repurchase or remarketing of equipment in default and repossession events. Utilities can be important partners or originators for EE equipment loan financing. If the utility can perform collections of finance payments via energy bills, the credit structure of the loans will be enhanced (see section 4.1).

3.5.1. Vendor financing (equipment supplier/vendor credit)

In order to support their marketing efforts, many general equipment manufacturers have established either captive or third-party vendor financing relationships. Vendor financing helps the manufacturer sell its product by facilitating financing of a customer's purchase. Vendor financing occurs when a financier provides a vendor with capital to enable them to offer "point of sale" financing for their equipment [8]. Leasing is the most common form of vendor financing.

Under a vendor financing scheme there are two types of arrangements: one between the vendor and the financier; and the other between the vendor and the customer. The former defines the terms that can be offered to the customer such as rates, length of term and necessary documentation. The vendor/customer agreement defines the repayment terms of the loan. For energy efficient equipment these agreements can be structured such that the customer payments are lower than the value of energy savings associated with the new equipment [8].

If vendor financing is done by a third party, that party has typically done the work necessary to become comfortable with the technical aspects of the product as well as its collateral value [9].

An example of vendor financing was the OTP Bank-Tivi street lighting program in Hungary. IFC has a Guarantee Facility Agreement (GFA) with OTP supporting loans to small and medium-size municipalities to acquire turnkey street lighting system retrofits. A vendor finance program was successfully implemented with Tivi, a company specialising in municipal street lighting. The OTP facility provided financing on a series of Tivi projects, using a fixed payment energy services agreement vendor finance structure.

3.5.2. Energy Efficient Mortgage

An energy mortgage is a mortgage that credits a home's energy efficiency in the home loan. For an energy efficient home, for example, it could mean giving the home buyer the ability to buy a higher quality home because of the lower monthly costs of heating and cooling the home. For homes in which the energy efficiency can be improved, this concept allows the money saved in monthly utility bills to finance energy improvements. There are two types of energy mortgages:

- Energy Improvement Mortgage (EIM) - finances the energy upgrades of an existing home in the mortgage loan using monthly energy savings
- Energy Efficient Mortgage (EEM) - uses the energy savings from a new energy efficient home to increase the home buying power of consumers and capitalizes the energy savings in the appraisal

Essentially, an EEM is a reduced rate mortgage that credits the energy efficiency of the building in the mortgage itself. To get an EEM a borrower typically has to have energy rating conducted before financing is approved. This verifies to the lender that the building is energy efficient. In the United States EEMs are typically used to purchase a new home that is already energy efficient, such as Energy Star qualified one.

An EIM is used to purchase existing homes that will have an energy efficiency improvement made. EIMs allow borrowers to include the cost of energy efficiency improvement in the mortgage without increasing the down payment. EIMs allow borrowers to use the money saved in utility bills to finance energy improvements. In the US both EEMs and EIMs require a home energy rating (building certification) to provide the lender with the estimated monthly energy savings and the value of the energy efficiency measures.

As an example of EIM in the EU, in 2009 France introduced eco-mortgage to undertake energy conservation works, which can be used in tandem with tax credits that are also available for home energy conservation. The mortgages l'éco prêt à taux zéro (éco PTZ) are available for a sum of up to 30,000 Euro, subject to a limit of 300 Euro/m² of the property. They are only available on a property constructed between 1948 and 1990. Repayment of the mortgage is over a period of 10 years, although in some cases the repayment period can be extended to 15 years. The mortgages are offered without a test of resources and are not subject to maximum income limits. The type of works envisaged by the regulations includes wall insulation, double and secondary glazing, new entrance doors, and replacement energy efficient space and water heating systems. The works will need to meet a minimum level of performance as set out in the regulations. The loans are available through the main French banks (see the country file of France in Annex I for more details) [23].

Vermont and several other US states, where a uniform national Energy Star rating system has been adopted, provide successful examples of EIM and EEM. The Energy-Rated Homes of Vermont (ERH-VT) programme provides a one-stop service to obtain EIM. In order to qualify for an EIM, an energy rating must be performed. ERH-VT provides the energy assessment, obtains contractor bids for the planned measures, oversees the contractor's work, conducts a

post-construction energy rating and prepares documents to secure the energy efficiency mortgage.

3.5.3. On-bill financing

Integrating loan payments with energy bills and allowing utilities to cut off energy supply to defaulting customers has the potential to both lower collection costs and enhance credit quality of the financing scheme, thereby lowering financing costs [15]. Payment via utility bill reduces risk of credit default and lowers collection risk.

Energy regulators may disapprove and distrust the addition of loan repayments into utility bills, preferring to keep the utility/customer contractual relationship implicit in utility billing simple and straightforward, and resisting, in particular, provisions allowing customer disconnection due to loan repayment default. See section 4.1. for successful examples of on-bill financing.

3.5.4. Other financing tools

'Wholesale' financing instruments

As already indicated, DFIs – often in cooperation with national governments – provide framework facilities that extend credit lines to local financial intermediaries for on-lending to private enterprises for investments in energy efficiency in certain sectors. Credit lines may be combined with a grant component targeting end-borrower investment grants and administration fees for participating banks. The EBRD has a number of credit lines in some New Member States.

Pooled procurement

Pooled procurement refers to procurement by public or by private entities joining forces in procuring energy efficient products or services related to improving the energy performance of new and renovated buildings, purchasing energy efficient office equipment and more efficient vehicles.

Export credit agencies

Export credit agencies (ECAs) are private or quasi-governmental institutions that act as intermediaries between national governments and exporters to issue export financing. They can provide credits (financial support) or credit insurance and guarantees or both, depending on the mandate they are given by respective governments. ECAs can also offer credit or cover on their own account; this does not differ from normal banking activities. Vendors and buyers can take advantage of export credits and guarantees supplied by the export credit agencies to sell or purchase imported equipment.

Carbon finance

Carbon finance refers to the purchase of project-based greenhouse gas emission reductions. The emission reductions are generally purchased through an IFI carbon fund on behalf of a contributor, or by an Annex-I entity regulated under the UNFCCC's Kyoto Protocol. Emissions reductions are purchased within the framework of the Kyoto Protocol's Clean Development Mechanism (CDM) or Joint Implementation (JI) [16].

Carbon funds typically do not lend or grant resources to projects, but rather contract to purchase emission reductions similar to a commercial transaction, paying for them annually or periodically once they have been verified by a third party auditor. The selling of emission reductions and their incorporation into the overall structure of a given transaction - or carbon finance - has been shown to increase the financial viability of projects, by adding an additional revenue stream, which reduces the risks of commercial lending or grant finance. Thus, carbon finance provides

a means of leveraging new private and public investment into projects that reduce greenhouse gas emissions [16]. Yet, carbon finance can imply new types of risk, especially in terms of performance on delivery and purchase contracts for credits from emissions-reducing projects. In general, EE projects typically do not generate enough emissions reductions for carbon finance to provide more than an increment in overall project returns, and a somewhat larger improvement in debt coverage ratios.

A good practice in valorising carbon revenue for project financing is set by the EIB-KfW Carbon program (see Box 1).

Box 1 The EIB-KfW Carbon Programme

The EIB-KfW Carbon Programme is a programme for acquiring greenhouse gas emission certificates. Certificates within the meaning of this programme are Emission Reduction Units (ERUs) from projects pursuant to Article 6 (Joint Implementation/JI) and Certified Emission Reductions (CERs) from projects approved in accordance with Article 12 of the Kyoto Protocol (Clean Development Mechanism/CDM), and in each case, must be applicable under the EU Linking Directive for use in Phase II of the EU ETS.

The aim of the Programme is twofold: Firstly, by way of providing additional cashflow to projects the purchase of Certificates encourages the implementation of projects that contribute to reducing global greenhouse gas emissions. Secondly, the Programme provides Buyers, who have otherwise no access to CDM and JI projects, with cost-effective Certificates that can be used to fulfil their obligations under the EU ETS.

Eligible Buyers are European corporate entities, and/or intermediaries representing corporate entities, who have compliance obligations under the ETS. The Programme is preferentially designed for the needs of those entities, who do not have the capacity to establish an in-house carbon trading activity.

To meet the needs of buyers, there will be the option to receive a delivery guarantee at the point that they enter into the Purchase and Agency Agreement. Commitments by Buyers will usually be accepted with a minimum commitment level of 500,000 Euro for each individual buyer (smaller amounts may be accommodated through intermediaries participating in the programme) and a maximum commitment level of 10 million Euro (for an intermediary acting on behalf of individual companies, a maximum commitment level of 15 million Euro). The programme volume is 100 million Euro.

KfW will select the projects according to customary banking practice and to cost and risk criteria. Selected projects must be applicable under the Kyoto Protocol and under the EU Linking Directive for use in Phase II of the EU Emissions Trading Scheme and shall fall within one of the following sectors: Renewable Energy; Land fill gas; Coal mine methane, coal bed methane; Fuel Switch; Energy efficiency; Carbon sequestration; Carbon capture and storage (CCS);. Land use, land use change and forestry.

The December 2005 COP/MOP decision to include "programs of activities" (PoAs) in the CDM (programmatic CDM) opens the door to scaling up implementation of dispersed end-use EE activities. A PoA is a program coordinated by a private or public entity that provides the organizational, financial, and methodological framework for emission reductions to occur. The program itself does not achieve the reductions, but rather provides the enabling environment for others to do so. While the programmatic CDM approach opens the CDM door more widely to energy efficiency, it is likely that not all EE programs, or at least not all aspects of EE programs, will be deemed eligible for the CDM in the short term. In the CDM, project activities have to be "traceable." EE programs that can be shown to directly replace inefficient technologies, or provide financing/financial incentives to do so, are more likely to qualify for the CDM. Policy-based EE programs are important for the increased uptake of EE equipment and activities, but may have more difficulty demonstrating direct causality—which is a key CDM criterion. Application of many dispersed end-use EE efforts as PoA need not wait for the development of specific CDM baseline and monitoring methodologies [24].

Policy tools such as Green Investment Schemes (GIS) and domestic carbon offsets can raise funds from carbon market that can be directed to public programs to support energy efficiency projects. GIS have been successfully introduced, for example, in the Czech Republic, Hungary and Latvia (see country files).

3.6. Supplementary mechanisms: public finance mechanisms, policies and programs

Governments can help close the financing gaps, catalyze private investment and accelerate energy efficiency market uptake via financial and non-financial interventions. Given that the large majority of EE technologies are commercially competitive, public financing should pave the way for private financing, rather than substitute it.

There is a wide range of finance mechanisms used by public funds to support energy efficiency. The most common are grants, soft loans, tax incentives, and contracting schemes (see the ESCO status report), as well as some instruments already discussed such as guarantees, venture capital and equity investments, mezzanine finance [7].

Grant programs (investment grants or interest rate subsidies) are often provided by governments to support the upfront cost of energy efficiency projects that may entail too high investment costs and long amortisation periods. Investment subsidies increase the financial rate of return on investment, increasing investors' demand for investment. In addition, investment subsidies improve cash flow and thus increase investors' access to debt finance [14].

Soft loans are commonly used for energy efficiency measures (see Annex I). Loan conditions include:

- extended payback periods,
- low or zero interest rates,
- short-term interest deferral periods, and/or
- inclusion of payback grace periods.

Revolving funds offer loans that can be repaid with the extra cash available due to energy savings. The repaid loans are used to finance new EE projects.

The funds are reimbursed by projects out of savings accumulated through energy efficiency and capacity gains. Likewise, grant funds can play an important role in this context, by being put in a first-loss position to reduce risk for co-financiers in the early years of operation. In programs of this type, it is important to select a program manager who will be especially pro-active in pursuing projects, recruiting co-financiers and supporting transactions.

Taxation can be a powerful tool to stimulate energy efficiency by giving incentives to invest in such projects through tax exemptions and through incentive regimes related to e.g. capital gain tax, property tax, VAT and accelerated or free depreciation[18]. Here we only outline specific tax incentives that can stimulate investment in energy efficiency, leaving out general carbon and/or energy taxation[19].

[18] Energy taxation as such is not considered here, but can be a strong motivator to undertake energy efficiency actions, especially among large energy users. For detailed examples, see the JRC report on Voluntary Agreements. In addition, in some countries, such as The Netherlands and Sweden, a tax shift is applied, imposing higher taxes on natural resources and environmental polluting activities and using the revenues to reduce taxation related to labour (e.g. income taxes).

[19] The Minimum Energy Tax directive determines the minimum tax levels on fossil fuels for the next 10 years, starting in 2004, and extends the scope of minimum tax rates to cover coal, gas and electricity.

Tax allowances are used, for instance, in the case of income tax deductions for investments in defined energy efficiency measures (e.g. insulation). They have the effect of a direct grant, but are administered via income tax declarations, without special grant applications.

Accelerated depreciation on investments in specified equipment, allows companies investing in energy saving technologies to depreciate it at a faster rate, entailing lower corporate tax. The Dutch Vamil scheme is an example of successful accelerated depreciation on designated equipment placed on a green fiscal list, thus bringing forward allowable costs, which can be used to offset against profits and improve cash flow. France also provides accelerated depreciation for industry.

Another form of tax allowance is the tax credit, whereby in addition to normal rules for tax allowance, a percentage of the investment cost of approved technologies can be used to offset corporate profit taxes. Exemptions of reduced rates of taxation on corporate profits are occasionally given to environmentally friendly activities. Denmark and the Netherlands use tax credits to encourage energy audits; France and Italy have established tax credits as a policy to promote EE. A tax relief offers a reduction in the amount of income tax payable.

A regime of differentiated VAT may function either to encourage or to discourage efficiency improvements. For instance, in some countries VAT on district heating (DH), natural gas and electricity may be reduced, while VAT on efficiency equipment and/or services may not be reduced, which has a negative impact on project economics (e.g. Hungary, Slovakia), while in other cases VAT for environmentally friendly products and goods related to energy savings may be reduced (e.g. Czech Republic).

Under certain conditions property tax regimes can demotivate owners from refurbishing their homes – in Sweden the calculation of the property tax is based on five categories, one of which is energy efficiency, so the better the performance of the property, the higher the property tax. In France the tax is calculated on the potential revenue in case the property is rented. On the contrary, in the Czech Republic house owners can get a real estate tax relief for five years if they reconstruct their heating system, switching from solid fuels to gas or RES and in Bulgaria high-efficiency residential buildings get a temporary exemption from property tax.

Public funds, while capable of stimulating interest in energy efficiency, should not the only tool to foster energy efficiency due to their inherently limited size and duration. Government funding often leads to stop-and-start in progress because once funding is depleted, potential participants may hold off in anticipation of renewed funding, creating consumer hesitation. This uncertainty tends to increase the cost of capital due to the hurry in meeting a deadline created by the end of an incentive and may cause a boom and bust cycle for capital equipment, for which pricing is driven by government funding.

Finally, regulatory frameworks can also facilitate the creation of additional cash flows, which improve EE project economics, most notably energy saving obligations and white certificate schemes as implemented and planned in a few MS (see the report by the JRC).

3.6.1. Public finance mechanisms: summary of limitation and success factors

Public grants

Public grant programmes are used in all MS – though to a different extent – in order to support EE projects that contribute to energy and social policies and meet other public policy goals, such as increased employment [19].

The advantage of public grant programmes is that provided the subsidy level is sufficient to attract the building owners, subsidies can be an important factor in raising the general awareness and trust in EE projects [19].

The great disadvantage is that in times of squeezed budgets across the EU, it is often difficult to put aside the necessary subsidies in the public budgets to realise the policy goals. This often place subsidy programs in a stop-and-start operational mode; this may actually delay project implementation encouraging potential project proponents to wait for better grant conditions or for the next funding call. In addition, the share of free riders – beneficiaries that would have implemented their economically sound projects even without the subsidy – is rarely monitored, which makes it difficult to realistically evaluate a subsidy program.

Therefore, comprehensive program packages are needed where public grant programmes interact with other financing schemes deployed by public and commercial FIs in order to increase the investment volume.

Revolving funds and soft loans

Revolving funds are intended to channel liquidity into markets where there is a constraint both in terms of access to financing and in terms of the amount of financing available, that is, where liquidity is constrained. Revolving funds inject special purpose public finance into the commercial finance system and are an appropriate tool when lack of liquidity in the finance sector is a major constraint for private finance to EE or when finance institutions need long-term credits to provide loans with longer tenor [14].

Revolving funds are self-sustaining financial schemes, which usually require one-time initial investment. In the area of energy efficiency, a revolving fund could combine public-sector grants and adequate financing structure for energy efficiency funding, provide loan guarantees to cover the default risks related to energy efficiency investments, and provide private sector loans in an adequate size. In order to reap the maximum benefits from the savings obtained through investments of the revolving fund, an adequate and systematic monitoring of energy savings is required. The advantage of revolving funds is that they are less dependent on external investors. If they are operated effectively, revolving fund can contribute to a permanent financing structure for energy efficiency investments, which is separate from political influence. Typical disadvantages for using revolving funds in energy efficiency are that they require substantial upfront investment and also might be cumbersome and expensive to administer [19]. Yet, the later complexity is also inherent to subsidy schemes.

Soft loans give long-term financial coverage to help bridge the pre-commercialisation financing gap for EE projects by direct subsidies on interest payments, by risk premiums (e.g. an IFI or a state can guarantee a certain amount of loans), or by capital gains to a revolving fund.

Taxation

Taxation can give incentives to invest in EE projects by improving their economic parameters through incentive regimes related to e.g. capital gain tax, property tax, VAT and accelerated or free depreciation. Tax allowances have the effect of a direct grant, but are administered via income tax declarations, without special grant applications. As with public grants, the big disadvantage of using taxation is that in order to deliver sizeable efficiency improvement, it places a burden on public budgets. Taxation incentives need to be integrated in comprehensive program packages interacting with other financing schemes deployed by public and commercial FIs.

3.7. The Structural funds and EIB financing instruments

3.7.1. Energy Efficiency in the Structural Funds

Structural funds have a key role to play in greening national and regional spending programs and serve as leverage for the release of additional private and public funds. Approximately 347.4 billion Euro[20] are available for MS between 2007 and 2013 to achieve the goals of EU Cohesion policy.

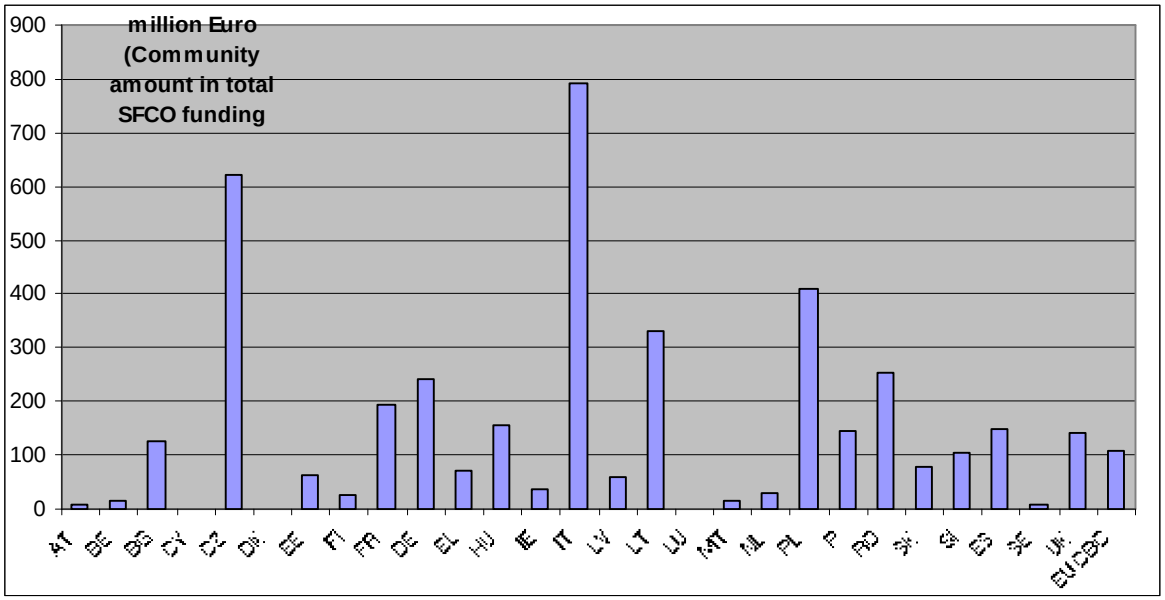
Figure 4 below presents the total allocations on energy efficiency, co-generation and energy management by MS under the programs notified for the period 2007-2013. This is based on an overview provided by DG REGIO of 226 programs under the Structural Funds and the Cohesion Fund in the areas of electricity, electricity (TEN-E), natural gas, natural gas (TEN-E), petroleum products, petroleum products (TEN-E), wind energy, solar energy, biomass, hydroelectric, geothermal and other, as well as energy efficiency, co-generation, energy management (the latter three items represent one category). No further disaggregating is available, thus it is not known what the share of end-use efficiency is in the total funding.

It can be seen that Italy, the Czech Republic and Poland have the highest absolute amounts of funding from the Structural Funds and the Cohesion Fund going into energy efficiency, co-generation and energy management – respectively 794 million Euro, 622 million Euro and 409 million Euro. The figure should be interpreted with care as we have no information as to the actual utilisation of funds under these operational programs. In addition, Figure 4 needs to be interpreted with an eye of the total indicative allocation by MS in 2007-2013, presented in Figure 5 in Annex II [25].

Based on the National Strategic Frameworks 2007-2013, over the period 2007-2013 Community funding on energy efficiency, co-generation and energy management total 4.2 billion Euro across EU-27. In addition, the 450 operational programmes for Cohesion policy 2007-2013 include investment totalling 9 billion Euro for energy-related projects and 4.8 billion Euro for renewable energies [26]. Analysis of OPs in the period 2007-2013 done in the framework of the PromoScene project points that on average New Member States have allocated approx. 2.4% of their SCF budget to EE and RES and in EU-27 the average is 2.6% [27].

[20] In 2008 prices or 308.041 billion Euro in 2004 prices [25]

Figure 4. Energy efficiency, co-generation, energy management (total amount of SFCO funding, Community amount)



Source: data from DG REGIO

Box 2 presents some good practices in using Structural Funds to private and public sector co-financing.

Structural funds can be used to create revolving financing instruments for energy efficiency in cities. One example is the JESSICA model of dedicating part of the Structural Funds to create revolving funds (thus delivering loans and not grants) to support integrated urban development, including energy efficiency investments.

Box 2. Good practices on Structural Funds leveraging private and public sector co-financing

The JESSICA Holding Fund in Lithuania

In June 2009 a tripartite agreement between the Ministry of Finance of the Republic of Lithuania, the Ministry of Environment of the Republic of Lithuania and the EIB was signed, which established the JESSICA Holding Fund for the modernization of residential apartment houses.

The EIB-managed JESSICA Holding Fund shall invest in energy efficiency projects for multi-apartment housing via the Lithuanian banking sector. Funds have been contributed from the ERDF alongside national match funding. Intermediary banks will act as energy-efficiency focused JESSICA Urban Development Funds (UDFs) in providing long term preferential loans with a fixed interest rate not exceeding 3%. The loans will be offered to home-owners in multi-apartment buildings with tenant associations acting as representatives and managing the process of implementation of chosen energy efficiency projects.

The contribution invested in the Holding Fund is 227 million Euro, which consists of ERDF funds (127 million Euro) and national funding (100 million Euro). The expectations are that commercial banks step in with further 20-40 million Euro.

Revolving fund for energy refurbishment in housing in Estonia

One leverage option for structural funds is to combine ERDF funding with loans from European banks like the CEB or the EIB. This system has been used in Estonia where a central revolving loan fund consisting of grant funds from the ERDF and loans from the CEB has been combined with funds from the Credit and Export Guarantee Fund KredEx (national guarantee fund) to provide long-term (up to 20 years) low-interest loans (currently 4.5% compared to 7% minimum on the market) through local commercial banks to multiple-unit residential buildings built before 1993. A 15% contribution should be brought by the home owners. This lending scheme, which was set up by Credit and Export Guarantee Fund KredEx with the help of technical assistance provided by KfW Bankengruppe, targets energy efficiency investments that have been defined as priority measures in an energy audit. The objective is to reach minimum 20-30% savings in the building's energy consumption.

Grants for energy efficiency in housing in France

Each French region will be permitted to use up to 4% of their Operational Programme funding for energy efficiency investments and greater use of renewable energy in existing housing. Operations must target a significant number of housing, most energy inefficient buildings or most effective energy-saving refurbishment actions. Two types of housing will be eligible: social housing and run-down co-ownership with social occupation, within the framework of an operation supported by ANAH (national housing agency).

For the most recently constructed buildings, the eligible actions will be the ones that achieve a gain of at least 8kWh/m2 and reach an energy consumption of less than 150kWh/m2. The French government has chosen to use the ERDF in a grant scheme as an additional resource to reach its objectives of retrofitting 800,000 very energy inefficient dwellings. In many cases, like in the Nord-Pas de Calais region, the ERDF will serve to release the extra investment needed to improve the increase energy performance of buildings.

Source: [28]

Other examples include the commitment of France to "low carbon economy" and the related screening of investments for 2007-13 operational programmes. France has developed a carbon evaluation tool to monitor CO_2 emissions produced by all projects funded with EU support. The carbon evaluation tool will be applied for investments in the framework of the CPER (State-Region contract) and of the Cohesion policy co-funded operational programmes.

In line with the amendment of the ERDF article 7 of May 2009, which extends the eligibility of EE and RES investments in existing housing, the allocation to EE and RES investments in

residential sector cannot exceed 4% of the total ERDF allocation to the MS for 2007-2013. The 4% is equivalent to 8 billion Euro across the EU. MS are to define categories of eligible housing in national rules with the objective of supporting social cohesion. There is no requirement to modify OPs, this is up to MS. The ERDF can consequently co-finance national, regional and local schemes related to, for instance, the insulation of walls, roofing and windows, and replacement of old boilers. There is no additional funding; therefore this measure requires a shift in the priorities set at regional level. It is up to MS and regional authorities to decide whether to make use of it or not [28].

In January 2010 DG REGIO has noted that 10 MS are actively utilising SCF for energy efficiency: Bulgaria, Estonia, France, Latvia, Lithuania, Malta, Portugal, Slovenia, the Netherlands and the UK. As of May 2010 DG REGIO is analysing the national strategic reports on the implementation of the Cohesion Policy and will possibly include further countries on the list[21]. Box 3 summarises the experiences of Bulgaria and Lithuania, who modified their OPs in 2009 in order to scale-up funding for EE.

Box 3. Structural Funds and energy efficiency: Bulgaria and Lithuania

Lithuania

In 2009 Lithuania modified Operational Programme for Promotion of Cohesion in line with the ERDF amendment. The amendment provides an extra amount of 140 million Euro to be allocated for the implementation of renovation activities for housing and public buildings. In total the amount of 147 million Euro was allocated to the implementation of housing measures.

Bulgaria

In 2009 Bulgaria modified Operational Programme "Regional Development" by rechanneling 120 million Euro. Out of these funds 40 million Euro is re-directed to support of energy efficiency and RES measures in the municipal educational infrastructure under and 13.9 million Euro are re-channelled to energy efficiency and RES measures in the municipal in educational infrastructure, owned by municipalities outside the city agglomerations. Further 33 million Euro is re-directed to priority "Implementation of the Integrated Plans for Urban Restoration and Development" to implement the JESSICA Initiative.

The PromoSCene project has identified a number of barriers in using SCF for sustainable energy investment, including [27]:

- Limited budget directly allocated to sustainable energy during the development of OPs;
- On the side of Managing Authorities: lack of targeted promotion, changing framework conditions of the OPs, lack of transparency of procedures and coordinated monitoring, as well as lack of platforms for exchange and dissemination of experience
- On the side of potential beneficiaries: lack of project development skills and capacity, problems in making projects bankable and lack of commitment when creating a consortium for bundling smaller projects.

[21] The national strategic reports are available at http://ec.europa.eu/regional_policy/policy/reporting/ms_reports_en.htm , mostly in national languages.

The barriers encountered on the side of Managing Authorities and beneficiaries during the implementation phase may hamper the absorption of SCF – a point of concern, especially in New Member States. With SCF spending deadlines approaching (according to the n+2 rule), budgets may be shifted from sustainable energy projects to large-scale projects [27].

Therefore one of the recommendations of this project is to link the EC Community Strategic Guidelines in the period 2014-2020 to the 20/20/20 targets in the same way as the link with the Lisbon strategy has been established in the present period. This will encourage MS to put more emphasis on sustainable energy in their National Strategic Reference Frameworks and can enhance the importance of this field for Management Authorities when defining the priorities and budgets in their OPs [27].

Box 4. Good practice in project preparation: CPMA in Lithuania

Central Project Management Agency in Lithuania

The Central Project Management Agency in Lithuania provides a good example in terms of preparation, bundling and financing of EE investment projects.

The European Commission provided for CPMA Extended Decentralised Implementation System (EDIS) accreditation, which allows involvement in implementation of other EU financing instruments (Structural funds) and special programmes. CPMA is responsible for the management of financial assistance funds provided by the EU, international financial institutions and other international and local donors, including EU structural assistance for the period 2007-2013, and provides centralized public procurement services and electronic tools to public and private sectors and performing market analysis.

3.7.2. EIB financing instruments

The SCF contribution is limited to a maximum percentage of the total eligible costs. The issue of co-financing is thus an important one: sometimes national governments provide additional financing, but there is always a share of own financing for beneficiaries. SCF are based on ex-post financing, which often results in the need for additional pre-financing [27].

The EIB in cooperation with the EBRD and other FIs has introduced several additional financial support mechanisms for SCF. Since 2007 Unit D3 in DG REGIO is engaged in developing and co-ordinating financial instruments in the framework of Cohesion Policy with activities focussed on the 4Js – JESSICA, JEREMIE, JASPERS and JASMINE.

The EIB pledged to finance up to 75% of EE investments resulting in 20% energy savings. The increase in overall EIB funds has shown in the amount of funding devoted to energy related projects: the Bank has beaten its 6.5 billion Euro target for 2008, ending the year up with 10.2 billion Euro of energy-related projects financed. Its 2009 target was set on 12 billion Euro. A large proportion of these energy investments directly aims at improving EE. EE investments have averaged 8% if the overall EIB lending over the past few years.

In line with this pledge and the possibilities provided in the framework of the Structural Funds, there has been experience in connecting financial means from the Structural Funds with EIB funds to create revolving financial instruments for EE. One example is the JESSICA model that involves dedicating part of the Structural Funds to create revolving fund to support integrated urban development, including EE investments.

3.7.2.1. JESSICA

JESSICA, Joint European Support for Sustainable Investment in City Areas, is an initiative of the EC in cooperation with the EIB and the Council of Europe Development Bank (CEB), in order to promote sustainable investment, and growth and jobs, in Europe's urban areas. MS have the opportunity of using some part of their Structural Funds to make repayable investments in projects forming part of an integrated plan for sustainable urban development. These investments may take the form of equity, loans and/or guarantees. They are delivered to projects via Urban Development Funds and, if required, Holding Funds. Urban Development Funds (UDFs) invest in public-private partnerships and urban projects included in an integrated plan for sustainable urban development. Holding Funds are funds set up to invest in several UDFs. Having a 'helping hand' in the JESSCIA implementation process, engaging technical competencies and expertise in establishing project pipeline and procuring UDFs, and allowing possible aggregation of other public/private sector financial resources are among the advantages of using a Holding Fund.

As of March 2010, 9 Holding Fund agreements have been signed between the EIB and the following MS and regions: Lithuania, Portugal, Wielkopolska region (PL), Western Pomerania region (PL), Andalucía (ES), London (UK), Northwest England (UK), Sicily (IT), and Moravia Silesia (CZ). 3 operations have been implemented with national financial institutions in Estonia (KredEx), Brandenburg region (ILB) and East Midlands region (King Sturge). Other JESSICA Holding Fund agreements are under negotiation. The legal commitments under JESSICA funds amount to about 1.08 billion Euro with 3 funds at national level and 9 at regional level. 10 Funds are Holding Funds and 2 are Urban Development Funds without holding funds. Table 1 presents the types of interventions supported by the JESSICA funds.

Table 1. JESSICA Funds

FUND	TYPE OF INTERVENTIONS
Wielkopolska (PL)	Urban Development and Regeneration
Andalucia (ES)	Urban Regeneration/Energy Efficiency
Western Pomerania (PL)	Urban Regeneration/Urban Infrastructure
Lithuania	Energy Efficiency (Housing)
Portugal	Under discussion (possible Urban Regeneration/Energy Efficiency)
London (UK)	Energy Efficiency in Urban Infrastructure
Northwest England (UK)	Urban Regeneration
Sicily (IT)	Urban Development/Energy Efficiency
Moravia Silesia (CZ)	Urban Regeneration (brownfield revitalisation)
Estonia	Energy Efficiency (Housing)
Brandenburg (DE)	Urban Development and Regeneration
East Midlands (UK)	Urban Regeneration

Source: [29]

JESSICA is already set to play an important role in EE and the JESSICA Holding Fund investment strategies for Lithuania (see Box 2), Andalucía, London and Greece are expected to channel more than 500 million Euro of long-term capital investment into energy efficiency for

housing, public buildings and other urban infrastructure. This exemplifies the flexibility in the scope of the JESSICA instrument and represents a scalable model, which could assist in creating synergies between different but complementary instruments in sustainable energy investment.

The Jessica Fund in London presents an interesting example. London's ERDF Operational Programme undertook to investigate the opportunity for using JESSICA in relation to delivering up to 70% (50 million Euro) of Priority 3 (sustainable places for business). An external consultant investigated structures, potential projects, and 'road-tested' with potential investors. 50 million Euro of ERDF funds are ring-fenced from Priority 3 to be deployed through a JESSICA fund - this will lever in at least a further 50 million Euro. The focus is on environmental infrastructure that will support sustainable economic development (e.g. decentralised energy systems, waste processing and reprocessing facilities). Investments will be targeted in opportunity areas, areas of intensification and regeneration, as defined by London Plan. The London HF targets those projects that just fail to be 'commercial' and provide necessary equity, loans or guarantees to encourage other investors to fund projects.

The EIB and the Sicily Region announced in November 2009 the creation of a 148 million Euro JESSICA Holding Fund for financing urban regeneration and energy efficiency in Sicilian cities. At the same time, the EIF and the Sicily Region signed an agreement to set up a JEREMIE fund for providing financial support for Sicily's small businesses through a variety of instruments and making available microcredit, worth a total of 60 million Euro.

A range of entities will be eligible for financing under the JESSICA fund for the Sicily Region: municipalities, public and semi-public companies, holders of public works concessions and firms involved in infrastructure construction and urban regeneration investment in a wide variety of sectors, including transport and mobility, architectural and cultural heritage conservation, energy efficiency and the development of renewable energies, service centres, universities and science parks, brownfield development and urban renewal.

Holding Funds represent an existing and scalable model for channelling further Structural Funds and leveraging additional resources specifically for EE.

3.7.2.2. JEREMIE

JEREMIE, Joint European Resources for Micro to medium Enterprises, is an initiative of the EC together with the EIB and the EIF in order to promote increased access to finance for the development of micro, small and medium-sized enterprises in the regions of the EU. JEREMIE offers MS the opportunity through their national or regional Managing Authorities, to use part of their Structural Funds to support SMEs by means of a wide array of equity instruments, guarantee instruments, quasi-equity instruments and other instruments through a revolving Holding Fund. The Holding Fund is organizing operations in cooperation with managing authorities, publishing calls for and selecting financial intermediaries, channeling money to financial intermediaries, as well as monitoring, controlling and reporting to managing authorities. The Holding Fund can provide SME-focused financial instruments to financial intermediaries.

EIF implements now JEREMIE in 9 MS or regions: Greece, Romania, Latvia, Lithuania, Slovakia, Bulgaria, Cyprus, as well as the regions of Languedoc-Roussillon and Campania. In addition, Hungary, Poland, Spain, as well as the regions of Wales, North East England, Andalusia, Cataluna, Auvergne, and Pomorskie are implementing JEREMIE with other Financial Institutions. In total JEREMIE holding Fund Agreements signed as of mid 2009 provide for a total amount of 3 billion Euro, with the EIF managing around one third of this amount and other financial institutions are managing two thirds of this amount. Equity instruments will be implemented mainly through venture capital (VC) funds targeting early stage companies. Holding Fund Manager may make investments in selected VC funds, generally innovative

companies with high growth potential. Priorities regarding stage or sector focus or funds will be set by the Managing Authority.

Guarantee Instruments will be structured by the Holding Fund Manager and funded from the Holding Fund and include

- National/Regional guarantee funds providing guarantees to financial institutions that in turn extend loans to the SMEs.
- Guarantee of micro-loans portfolio: a micro-guarantee fund provides guarantees to micro-lenders that in turn extend micro-loans to private persons and SMEs.
- Counter-guarantee scheme whereby counter guarantees to the benefit of guarantee institutions are provided. A counter-guarantee typically enhances the local guarantee schemes' activity as it reduces part of the risk borne by these institutions.
- Equity guarantee fund providing guarantees to the benefit of equity investors such as risk capital funds, private/public investment companies, individuals or business angels. An equity guarantee is a means to enhance the supply of "own funds" investments in companies, thus strengthening their financial position.
- Securitisation operations: may be implemented in countries where the necessary legal framework has been introduced.

Quasi-equity Instruments include participating loans for pre-seed R&D projects and mezzanine finance to growing businesses. Other instruments include Technology Transfer Vehicles – the process of converting scientific findings from research laboratories into products that may be commercially exploited – and Business Angels Matching Fund (BAMF) – regional and local business angel networks (BAN), working towards their integration into the European Business Angels Network (EBAN).

There are no specific sectors identified under JEREMIE (with the exception of sectors excluded by the ERDF regulation). The specific objectives and market priorities of JEREMIE will be defined by the Managing Authorities based on evaluations and could target a wide range of sectors. SMEs interested in obtaining finance will be able to identify and contact financial intermediaries in their countries based on information provided in this website, which will be provided as and when the JEREMIE initiative becomes active in Member States and Regions.

One example is the JEREMIE Sicily agreement providing for the creation of a 60 million Euro fund enabling the Sicily Region to use ERDF resources to support Sicily's small businesses during the period 2009-2013. The fund will establish partnerships with various types of financial institution to channel financial resources to small firms. JEREMIE will especially be able to offer selected financial intermediaries a wide range of dedicated product: e.g. guarantees, microcredit and securitisation. This is the second JEREMIE agreement in Italy following the one signed with the Campania Region in 2008.

The major JEREMIE benefits include [28]:

- Front-loaded payments from the Structural Funds - Contributions from the OPs to the JEREMIE Holding Fund will be eligible for interim payments by EU Structural Funds, giving Managing Authorities more advantages in allocating these resources. Structural Fund contributions to the Holding Funds must be invested in SMEs by 2015;
- Flexibility benefits of a portfolio approach - The Holding Fund will be able to reallocate the resources to one or more financial products in a flexible way, depending on the actual demand over time; furthermore, the umbrella fund approach will allow a diversification of risks and expected returns due to financial products having different default rates;
- Recycling of funds - The Holding Fund is of a revolving nature, receiving repayments from the financial intermediaries for further investments in the SME sector. This makes

SME support via EU Structural Funds more sustainable than using the pure grant approach;

- Leverage - A significant implied advantage of JEREMIE is its potential ability to engage EIB long term loans, and the financial sector, either at the Holding Fund level, with additional capital from financial institutions, or at the level of the financial instruments through co-financing, e.g. in both cases in cooperation with the EIB;
- The EIF's expertise as a Holding Fund manager can be of particular added value in the less-developed regions/Member States, where there is a need for capacity-building initiatives and transfer of know-how between local institutions and the EIF;
- In those regions where JEREMIE is managed by another body, the EIF can also be involved as an adviser, for a wide range of services such as due diligence/second opinions, setting-up of financial vehicles, etc.

3.7.2.3. JASPERS

JASPERS, the Joint Assistance to Support Projects in European Regions, helps the 12 EU Member States that joined the EU in 2004 and 2007 increase their capacity to absorb the available SCF. JASPERS assists in the preparation of major projects to be submitted for grant application. The aim is to increase the quantity, quality and rapidity of projects, so that they can be approved more quickly by the services of the Commission.

Through this joint initiative, DG REGIO and the EIB, in cooperation with the EBRD and the KfW share their professional experience with the beneficiary MS in order to help them use Structural Funds more effectively. The JASPERS project preparation facility is available for infrastructure projects, primarily involving the upgrading of transport networks, environmental improvement and investments enhancing energy efficiency and using renewable energy. It also covers the improvement of urban transport as well as large projects in other sectors eligible for EU assistance such as health, R&D and urban redevelopment. Since 2006, the year in which it started operations, JASPERS has completed 179 assignments and as of 30 September 2009, there were 445 active assignments in progress.

JASPERS is complementary to the project preparation work carried out by national and local authorities and is aimed at providing assistance as required for any stage of the project cycle from the early stages of project conception through to the final application for EU funding or the decision to provide EU funding by the national authorities. This assistance may cover technical, economic and financial aspects and any other preparatory work needed to deliver a fully developed project. It is geared to providing advice, ensuring coordination, developing and reviewing project structures, removing bottlenecks, filling gaps and identifying problems not addressed, e.g. state aid, environmental impact assessment, etc. This is a TA instrument, which is not really focused on EE, but can be utilized in project preparation for large-scale EE projects. JASPERS focuses on larger projects with total costs exceeding 25 million Euro for environmental projects and 50 million Euro for transport.

3.7.2.4. ELENA

ELENA – the European Local Energy Assistance facility – is designed to help cities and regions unlock their EE potential by providing technical assistance to structure and implement projects in the most efficient way so they can attract finance from local banks or other sources, such as EIB. The facility will provide 15 million euro to cover the technical assistance costs related to e.g. retrofitting of public and private buildings, sustainable building, energy efficient district heating and cooling networks, or environmentally friendly transport. The technical assistance is funded from the IEE programme and will cover up to 90% of the costs. Eligible costs may include

advice on public procurement, legal services, advanced energy auditing, project management assistance, assistance on working with ESCOs. Technical assistance supported by the ELENA facility can be provided to a local or regional authority or another public body or a grouping of such bodies coming from the countries participating in the IEE programme with a strategy to curb their CO_2 emissions. The grants can be coupled with EIB loans and loans from commercial banks.

Since the ELENA facility has only started in December 2009, there is not much experience, but already a lot of in principle qualified requests[22]. The first funding agreement has been signed in early May 2010 during the Covenant of Mayors event.

3.7.2.5. Others

JASMINE – the European Commission Initiative to reinforce development of micro-credit in Europe – was launched in September 2008 and provides technical assistance for selected micro finance institutions to improve the quality of their operations, to expand and become sustainable. JASMINE is operation with the EIF having approved the first operation in September 2009 (1.85 million Euro to COPEST).

Outside of the framework of these financing tools, the EIB has granted 4.2 billion in loans in the period 2000-2009 in social housing sector alone. For example since 2000, the EIB has provided more than 1.6 billion Euro loans in the social housing sector in UK. Another example is the Walloon investment plan in social housing that has been partly financed since 2004 through a 500 million Euro loans with the aim to renovate more than 35 000 dwellings at high energy efficiency standards [28].

Another recent example of EIB action in favour of energy efficiency is the 250 million Euro loan to Fortum Corp., to finance the construction of two cogeneration plants located in Finland and Poland, as well as the implementation of digital remote metering infrastructure in Sweden.

The EU's Risk Sharing Finance Facility (RSFF) was created to support debt financing in research, technological development, innovation and demonstration projects in the EU. The main objective is to improve access to debt financing for promoters of research and innovation investments by sharing the underlying risks between the EU's 7th Research Framework Programme and the EIB. The RSFF will, through capital allocations and provisions of 1 billion Euro each from FP7 and the EIB for the period 2007-2013, guarantee the risks borne by EIB when lending directly to the promoters or when guaranteeing loans made by FIs.

[22] Personal communication with Ralf Goldmann, EIB.

4. FINANCING INSTRUMENTS FOR ENERGY EFFICIENCY IN THE EUROPEAN UNION: SUMMARY

This report has identified and analysed the implementation of different financing products, measures and mechanisms for EE developed at national level in the MS, which are summarised in this section. Annex I presents a series of 27 country sheets reviewing both public funds available for EE projects and the activity of commercial financing institutions with respect to EE; they contain more details for all references to country financing schemes made in the present section.

There is a high variability in the characteristics of the reviewed markets in terms of both financing tools available – in terms of providers (public, private or combination), typology (debt, equity, etc.) and technical features (targeted sectors, scope of technologies supported, etc.). The existence of a wide range of financial products is not in itself the only pre-cursor of maturity of the financial market for EE. Instead, the degree of specialisation – the presence of customised financing products in terms of target group, technology and context – is a better indicator [30].

Grant programs offering investment subsidies are one of the most common financing tools for EE and have been introduced in virtually all MS. The publicly-backed grant schemes introduced at national level vary a lot in nature – some MS prefer to target only the residential sector with investment subsidies in the form of grants (or even low-income households only) limiting the grants to certain technologies, while others keep a grant element to soft-loan schemes that stretch across sectors. In New Member States a strong focus has been placed on grants targeting existing residential buildings, in particular panel multi-family buildings. Public funds may aim to target the residential sector, 'softening' – but not replacing – commercial financing for EE projects in all other sectors (industry, public and commercial).

Some MS allow higher level of subsidy for projects with better performance in terms of saving improvements or efficiency. A few examples are subsidy schemes in Austria, the Flemish region (Belgium), the GIS schemes in Hungary and Latvia, Lithuania, Luxembourg and the Netherlands. Other MS optimise the financial performance of both subsidy schemes and soft loans by requiring a minimum amount of savings - e.g. Austria, Cyprus and Romania, the loans of KfW in Germany and the German Coal Fund in Hungary, the auctioning system applied by the Electricity Savings Trust in Denmark with respect to subsidy distribution. Another approach is to only provide subsidies to projects that exceed existing standards – examples include the Green to Saving scheme in the Czech Republic, the Carbon Home program in Ireland, the Thermal-modernisation fund in Poland. It has been reported that in some MS numerous subsidy schemes exists, especially where national, regional and local authorities may be actively involved in promoting EE.

MS differ in their approach towards fiscal instruments as a tool for energy efficiency. Tax reductions have been traditionally common in France, Italy, the Netherlands, the UK, and more recently - and to a smaller extend - Sweden and Belgium. The Netherlands has also made wide usage of accelerated depreciation. Taxation as a way to promote EE is getting popularity also in New Member States and the Czech Republic, Latvia and Lithuania have some form of fiscal incentive for EE. Some MS make tax reductions or exemption contingent upon building performance – this is the case with property taxes or stamp duties in France, the UK, Portugal and Bulgaria. It needs to be pointed out that in countries where flat tax rates exist – in corporate

profit taxation and/or in income taxation – tax reductions may not be a feasible option (e.g. Slovakia, Romania).

Credit lines and guarantee schemes for EE are available in a number of countries. In some MS these have been established with the support of public banks, including guarantee and development banks – for instance KfW (in Germany, but also abroad – e.g. in the Czech Republic via local FIs), the Czech Guarantee and Development Bank in the Czech Republic, KredEx in Estonia, BPME and Ademe (the Fogime guarantee scheme) in France, the Bank for Environmental Protection in Poland. Fidi Toscana and Finpeimonte – working with Italian regions of Toscana and Piedmont – provide guarantees and/or on-lending to CFIs. In Spain the IDEA – a state-owned business entity that reports to the Ministry of Industry, Tourism and Trade – has a credit line for EE and acts as a financier to businesses. The Ministry of Economy and Foreign Trade in Luxembourg offers the status of EE partner to CFIs that offer lower interest rate for EE projects.

In some New Member States – Bulgaria, Slovakia, Romania – credit lines and guarantee schemes have typically been established by IFIs, such as the EBRD and the World Bank, targeting energy efficiency projects implemented by enterprises, local authorities, individuals. The IFC has been also active in the region with the CEEF program covering Hungary, the Czech Republic, Slovakia, Latvia and Lithuania. IFIs used to be very active during the Accession period in these countries, often combining credit lines or guarantee schemes with advisory service to help build project pipelines. As with subsidies, donor programs need a certain degree of coordination to avoid crowing effect and direct competition between programs – this has happen in Bulgaria, where the EBRD and the World Bank have established facilities that target a similar group of borrowers.

In the case of Bulgaria and Slovakia the EBRD loans are packaged with the possibility to use grants from the decommissioning support funds that these countries have for blocks in their nuclear power plants.

Some MS have established supportive frameworks to encourage banks to offer preferential loans for EE on their own initiative. The Netherlands is the leader in this respect with the Green Funds; the Green Funds are enabler for the offer of preferential loans by CFIs. Under the Livret de Développment Durable (LDD) in France banks must use a portion of funds made available to offer preferential loans for residential energy conservation projects.

Analysis of National Strategic Frameworks shows that MS have allocated on average less than 3% of SCF funding to EE and RES [27]. The ERDF article 7 amendment of 2009 extends the eligibility of EE and RES investments in existing housing, allowing allocation of up to 4% of the total ERDF funding for 2007-2013 for EE and RES investments in residential sector, which is equivalent to 8 billion Euro. This measure requires a shift in the priorities set at national and regional level and it is up to MS and regional authorities to decide whether to make use of it or not. A number of MS have been actively utilising SCF for energy efficiency, including Bulgaria, Estonia, France, Latvia, Lithuania, Malta, Portugal, Slovenia, the Netherlands and the UK. Lithuania and Bulgaria have used the possibility given by the amendment to establish (or plan) JESSICA funds for EE.

The EIB also has a number of initiatives, whereby various financial sources can be extended for EE. The JESSICA and ELENA facilities are most relevant for EE; both target cities. JESSICA offers a scalable model to channel ERDF funds into EE and to leverage further public and private funds. Under the ELENA facility more than 1 billion Euro of energy efficiency and renewable energy projects are expected to be supported in 2010 with a first agreement expected in April 2010 (Barcelona) and the EIB currently in detailed discussions with 16 other cities or regions about their investment plans to increase energy efficiency and develop renewable energy. The outreach of the JEREMIE facility for SMEs can in principle be used for EE, while

JASPERS can be utilized in project preparation for large-scale EE projects with total costs exceeding 25 million Euro. Other examples of EIB financing are the credit lines extended to Slovenia (Eco Fund-I and II). The EIB has pledged to finance up to 75% of EE instruments resulting in 20% energy savings.

Public banks have an important role in financing and leveraging financing for EE projects because they can raise funds from the financial markets and make them available – via commercial banks – to project proponents. As shown by experience in Germany, public banks can also utilise state subsidies to improve the financial conditions of programs and expand their volume. Yet, caution is needed as the offer from public banks – unless interlinked with CFI products – may limit the development of a differentiated range of private sector products.

Our findings results confirm the results of a UNEP survey of lending activities in EE, namely that public-sector FIs are often leading efforts to mainstream EE into their institutions, and to develop financing tools and options for a specific range of EE activities. This is primarily due to the government mandate and resources that enable these institutions to offer, for example, lower interest rate finance, grant-finance for technical services, such as energy efficiency audits, and other forms of assistance to private and public sector clients. The scale of effort varies across institutions, as does the level of experience and focus to date. Germany and France, for example, have public-sector FI programmes aimed at stimulating national EE activities in specific domestic market segments [31].

On the other hand, while CFIs appear to be interested in EE, they seem to find it difficult to get the level of scale and financing opportunity required to make specific EE activities commercially attractive, particularly in the context of project finance. It needs to be emphasised that in CFIs funding for EE activities may be folded into more general borrowing activities - e.g. corporate, consumer, or municipal finance and may therefore not be visible as EE by the lender [31]. CFIs have been reported to be active in financing EE projects and/or developing financing products that target EE project proponents in a few countries, including Austria, Bulgaria, the Czech Republic, Estonia, Germany, as well as the Netherlands, Latvia and Lithuania. Yet, commercial financing remains overwhelmingly asset-based and focussed on corporate financing that relies on an individual company's credit-worthiness, rather than project financing that relies on a project's cash flow expectations.

A few New Member States – notably Hungary, the Czech Republic and Latvia – have established Green Investment Schemes, whereby proceeds from selling AAUs are used to finance subsidy programs, mostly focussed on refurbishment of residential panel buildings. Carbon finance can provide a means of leveraging new private and public investment into EE projects that reduce GHG emissions. A good practice in valorising carbon revenue for project financing is set by the EIB-KfW Carbon program.

Annex II provides a summary of some national measures with relevance to EE that were proposed as part of the EU Economic Recovery Plan. These concern mostly combination of tax, soft loans and grants, with some schemes specifically targeted at low-income households and some countries having grants for low energy buildings [32].

4.1. Examples of successful and innovative EE financing schemes

A number of innovative financing models aim at eliminating first costs as these are often pointed as a major hurdle to EE projects, including ones with short payback times and clear economic benefits. Some financing models implemented in the US [33] and the EU are outlined below, which present new and/or successful financing models. The authors believe that some concepts and structures of policy tools applied in the US and referred to in the present report merit

reflection and possibly consideration in the European context. This is particularly the case of financing in the residential sector, where most MS rely heavily on grants (burdensome for public budgets) and soft loans (whereby servicing a loan may offset and go beyond any energy savings on the bill).

4.1.1. Pay-as-You-Save

In early 2010 the UK government launched the "Warm homes, greener homes" initiative, which includes a new form of 'Green Finance' based on a Pay as You Save model (PAYS). The government expects this to provide approximately a third of the financing for major insulation and support upfront payments for any energy saving eco-upgrade with pay-back through energy savings or micro-generation revenue. Instead of paying for the eco-upgrade upfront, householders will be able to get finance at term such that householders will be able to cover the cost of the installation out of bill savings, and usually with a further monthly surplus as well. The finance itself would come from the private sector, as banks and others provide funding for the eco-upgrade, secured against future savings on bills.

At the moment, an important barrier to the PAYS model is that homeowners move on average about every twelve years, which is generally not enough time for the bill reductions to cover the upfront costs. The solution is to allow the cost of the upgrade to be attached to the home, not the homeowner. Householders would then only be responsible for the repayments while benefitting from the measures. This requires new, primary legislation to enable Green Finance for energy efficiency installation to attach to the property[23]. In principle the PAYS charge can be collected by the local authority (council tax system) or by the energy supplier (electricity or gas bill).

The PAYS charge can be collected by the local authority (e.g. via the council tax system) or by the energy supplier (e.g. via the electricity or gas bill).

4.1.2. Property taxes

Efficiency improvements can be financed from contractual assessments on existing properties (i.e. property taxes). Specifically, local cities and municipalities can finance EE projects by issuing a bond - or raising funds through other means - to pay for initial installation costs with repayment made through tax rolls. City and municipal agencies, in cooperation with local utilities, can work to formally integrate property tax-based and other contractual assessments as a financing option under any public, private, and utility EE programs. Other central funds for EE could be a source of capital for programs to create revolving loan funds, as they would be quickly deployed, and would return to the local agencies for use in subsequent rounds of EE financing [4].

In the US Property Assessed Clean Energy (PACE) Programs finance EE upgrades through long-term loans that are repaid via an annual property tax assessment. Loans under PACE programs are secured by placing an additional lien on a property that is senior to the existing mortgage debt. PACE financing programs are particularly well suited for residential EE projects but are also applicable to commercial facilities. As of September 2009, 17 American states have, or are actively considering the adoption of, a PACE program. Although each program has unique characteristics - e.g., participation of different stakeholder groups and access to regional EE incentive funds - they all use a property tax lien as collateral to ensure loan repayment.

The Energy Independence Program (EIP) of Palm Desert (CA) offers property owners 100% financing for approved EE measures. Under the EIP, a property owner can receive up to a 20-

[23] See http://www.decc.gov.uk/en/content/cms/what_we_do/consumers/saving_energy/hem/hem.aspx

year loan (although owners can opt for a shorter repayment period) at 7.0% interest that is paid back through a semi-annual property tax assessment. If the property is sold prior to the end of the loan term, the lien remains with the property and is inherited by the new owner. The lien is placed on the property and is senior to the first deed of trust. The initial source of capital (loan funds) for EIP was a 2.5 million USD disbursement from the city's General Fund. Since that initial tranche of funding, additional funds were secured through a bond issued by the city's Redevelopment Agency [33].

PACE programs provide property owners with an innovative no-first-cost option to finance EE and RE systems within a defined geographic region. The critical area of innovation shared by all PACE programs is their ability to utilize a tax lien to secure EE investments. Additional key areas of innovation include:

• Financing is Attached to Property;

• Secure Loans.

PACE programs can also utilize a city or a municipality's strong credit to provide property owners with a lower cost of financing than they otherwise might receive.

Although PACE initiatives remove first cost barriers for property owners, they do not address challenges that a local entity faces in securing capital to fund projects and cover program administration expenses. For public bond issuances to be cost effective, a large volume of projects first need to be in place. Further, PACE programs must also address and overcome concerns currently being raised by the mortgage industry regarding the placement of a priority tax lien on a property [33].

4.1.3. On-bill repayment

USA – Clean Energy Works Program

In 2009 this model was introduced via the Clean Energy Works Program (CWEP) in Portland (Oregon). Under CWEP single-family residential homeowners can receive 100% financing to implement a wide range of EE measures. Loans are provided at attractive levels of fixed interest rates and are amortized over a 20-year period. Customers repay loans through their regular utility bill.

CEWP is a joint venture between the Energy Trust of Oregon, the City of Portland, and Shorebank Enterprise Cascadia (SBEC), which issues the loans. As part of its underwriting process, SBEC conducts a standard credit check and property title search. The local participating utility also provides SBEC with 12 months of a customer's repayment history.

Loans issued under CEWP will be made as a deed of trust filing that has a junior position to a customer's existing mortgage. CEWP loans will be structured such that they are due upon the sale or transfer of a property. SBEC manages a revolving loan fund, on behalf of CEWP, through funds received from both the City of Portland and Federal Energy Conservation Block Grants. In addition to the joint venture partners, CEWP is being implemented as a public-private partnership that involves local utilities (Portland General Electric, Pacific Power, and Northwest Natural) and a group of selected EE contractors that meet certification requirements to be considered qualified to perform this type of work [33].

USA – San Diego Gas and Electric Program (SDG&E)

A utility can provide its customers with an unsecured loan that covers 100% of EE equipment and installation costs. The customer then pays the loan via an on-the-bill financing (OBF) surcharge that is added on to the regular utility bill. Energy savings realized from the EE project typically equal or exceed the monthly OBF loan repayment obligation. OBF is not a new concept

for the EE marketplace, with utilities in California, Connecticut, Rhode Island, Massachusetts, and other states having offered different variations of OBF for more than 10 years.

As part of SDG&E's standard portfolio of EE programs, it offers an OBF option that enables commercial property owners to avoid the up-front cost of implementing EE projects: eligible customers can finance up to 100% of the cost of an EE upgrade through an interest-free loan that is repaid on their regular utility bill. In two years of the program's full operation, SDG&E has implemented more than 180 projects that are now operational; over a hundred more have applied and are currently in project phases from pre-inspection to installation.

Loan repayment terms are individually structured for each project such that the customer can achieve bill neutrality. The OBF loan is offered at zero percent interest with the repayment terms and loan size varying based on the type of customer and the estimated simple payback period of the EE project.

Upon any potential transferring of ownership of the property or closing of utility account, the customer must pay off the remaining balance on the OBF loan.

As part of SDG&E's 2006-2009 EE portfolio, Sempra (SDG&E's parent company) provided the working capital to fund OBF loans. For the 2010-2012 EE portfolio, SDG&E is seeking approval from the CPUC to secure a 9 million USD revolving loan pool that would be funded through rate-payer money rather than working capital. This rate-payer funded revolving pool would be replenished by the receipt of loan payments from customers that would then be utilized to make new loans.

While this financing tool offers a comprehensive solution, its broad-based adoption may be constrained since many utilities are reluctant to perform what are considered traditional banking functions for customers and may be reluctant to take on any risks associated with making loans to customers using their own capital or ratepayer funds. Utilities may require short repayment periods, which can make comprehensive EE retrofits challenging [33].

4.1.4. Payment based on the cost per avoided unit of energy

Metrus Energy (USA) offers a product that allows repayment based on cost of avoided unit of energy (e.g. cents/kWh avoided). It provides capital, project development, and asset management services for EE projects at large industrial, manufacturing, and commercial facilities.

Metrus provides 100% financing to implement projects using its Efficiency Services Agreement (ESA) structure whereby customer repayments are made on a cost per avoided unit of energy basis. ESA contracts are typically less than 10 years in duration with customers having periodic buyout options during the term of the agreement. Projects implemented under an ESA vary in size and cost, with typical investments ranging from 1 to 10 million USD.

Metrus serves as the financier and owner of EE assets and it partners with ESCOs and energy service providers to carry out required project installation and maintenance activities. Metrus finances and develops EE projects via two key contractual agreements that it enters into with a customer and a service provider [33].

There are issues with all these innovative models, which need to be resolved in each national context. Decisions on which models are most appropriate depend on the final shape of the overall delivery system for household EE measures. For instance, financing options relying on the energy suppliers mainly are most compatible with delivery options where suppliers have a central role (e.g. the UK).

5. RECOMMENDATIONS

The characteristics of EE financing create marketing barriers, increase development risk and costs, reduce the interest of financial institutions in the EE sector and contribute to the gap between the economic potential for energy efficiency versus commercial achievement. Because the barriers are related to both the supply side and the demand side of EE financing, a successful strategy for increasing financing for EE improvements would need to target a combination of [1]:

- access to finance, with financial products structured and adapted to the target market, with
- marketing, project development and project delivery mechanisms that generate a steady flow of investment ready projects.

5.1. Financial products

Identifying market activity and where market failure is occurring in each national market, from a finance and investment perspective, is crucial in formulating appropriate policy responses and signals as to how financial sector actors may move forward.

Initially public authorities or DFIs – including public banks – may need to promote customised financing products to respond to the specific barriers to EE financing present in each national market. For example, special purpose credit lines and/or revolving funds may be appropriate tools when there are liquidity constraints in the banking sector or the need to provide long-term credits to finance institutions. A guarantee scheme or other risk mitigating tools may be appropriate when the financing sector perceives that the risk of EE products is too high or in market segments where the first cost hurdle may be insurmountable (e.g. financing residential EE projects). Where EE investors' equity is insufficient to comply with the minimum equity requirement, a complementary instrument is needed, such as subordinated debt that can substitute and reduce the amount of senior debt and close an existing equity gap. As experience of IFIs shows, technical assistance is a core element of working with CFIs towards establishing EE financing products.

It is of upmost importance to ensure that public funds leverage private financing, paving the way for private financing and not substituting it in the long term. Thus the continuum of increasing commercial viability can be targeted with:

- Public grants to target projects where no alternative funds can be expected, with high risk, little evidence of market demand, low funding security, 'non-financial' returns, but with outputs essential to policy;
- Public-private partnerships – such as Holding Funds under the JESSICA model – can target projects where returns are in the long term and do not match commercial needs, where requirements for long term debt and equity or additional funding security or guarantees are required, i.e. projects with fluid risk profile and little or no robust market demand;
- Commercial financing should be encouraged for projects with clear and understandable risk profile and normal levels of commercial returns that are commensurate with the project risks. Strong rationale for commercial funding should be provided.

Publicly-backed grant support schemes shall continue to play an important role in financing EE. While they can stimulate the market, help to accelerate end-user acceptance and eventually decrease costs, investment subsidy programmes need clear phase-out clauses to ensure that long term public financing does not distort the commercial lending market. The entire cycle of planning, implementing and evaluating subsidy schemes needs to be designed and followed with great care in order to identify where there is a need for public money, communicating the availability and conditions properly, while ensuring adequate results in terms of outreach and savings, streamlining the procedures and minimising the share of free-riders. Because EE investment needs are huge, better leverage of public support is essential, which can be achieved by utilising financing instruments such as guarantees and revolving funds, as well as by establishing comprehensive financing programmes that align the incentives of different financing instruments (grants, loans, taxation). To ensure that savings do materialise, grant funding should be conditional on efficiency improvements or on savings delivered.

Different sectors call for different approaches. While for ESCOs and project proponents from the industry and commercial sector it may be important to promote cash flow-based lending on project basis (project financing), for households financing on purely commercial terms may be unlikely to be attractive as the cost of a loan is likely to be higher than the value of the energy savings on the energy bill of the user. There are various ways in which commercial finance can be made more attractive: finance can be subsidised to make it cheaper, or the duration of the loan can be increased in order to reduce the monthly payments or a combination of the two to meet the different needs of different project proponents.

The existence of a wide range of financial products is not in itself the only pre-cursor of maturity of the financial market for EE. Instead, the degree of specialisation – the presence of customised financing products in terms of target group, technology and context – is a better indicator [30]. Ultimately, public funds may aim to target the residential sector, 'softening' – but not replacing – commercial financing for EE projects in all other sectors (industry, public and commercial).

Successful project bundling (pooling/aggregation) strategies can help overcome many of the key barriers. Achieving scale is a critical issue for any new business but is particularly acute in the EE finance marketplace, which is characterised by a large number of small projects that involve the installation of numerous types of equipment at facilities with differing operational parameters and energy demand profiles. To achieve sufficient scale, a strategy is required that allows for the aggregation of individual projects, technologies, service offerings, and investments into a larger and more cohesive combination of opportunities, which would be interesting for ESCOs financial institutions. As demonstrated by the uptake of energy performance contracting in Germany and Austria, targeting public institutions and facilities for large-scale retrofit programmes can kick-start market activity. In the residential sector, housing associations – backed by legislative rules that give them sufficient statutory powers – are important actors.

Clear broad-level mandates are needed for public FIs and equivalent entities at national and local level. Such mandates should establish dedicated EE competencies and resources and aim at systematically pursuing EE financing and EE efforts across financing operations, for example, by means of energy audits [31].

To summarise, there are a wide range of instruments that can be employed and/or scaled up to promote EE [33], including:

- Guarantee programmes that expand access to debt, thereby lowering the cost of financing and enabling more comprehensive EE project development;
- Special purpose credit lines or revolving funds to mitigate liquidity constraints in the banking sector and/or provide long-term credits to finance institutions and subordinated debt instruments to close an existing equity gap.

- Engaging DFIs – including public banks – as they are able to structure and competitively fund customized EE programs and financing initiatives;
- Ensuring affordable financing in the residential sector, which is collateral free (cash flow based), low interest rate and long-term. This market segment can be served by public banks and the use of guarantors – such as IFIs, large housing associations, non-profit organisations – and can be scaled up in order to reduce the cost of financing and mitigate risks.
- Upgrading utility IT and billing systems to facilitate on-bill repayment by customers. Allowing for long on-bill financing loan terms and broad scope of utility programmes to foster the implementation of multi-measure EE projects;
- Attaching loans to property taxes and providing EE with tax benefits;
- Expanding partnerships between financing sources and utilities, city agencies, and ESCOs, which have longstanding relationships with customers, to rapidly identify EE opportunities.

With respect to the ESD, the Commission may encourage MS to increase the involvement of public banks and CFIs in energy efficiency in line with Art. 11.

Last, but not least, given the modest focus given to EE in the Structural and Cohesion Finds, it is recommended to link the EC Community Strategic Guidelines in the period 2014-2020 with the 20/20/20 targets. This will encourage MS to place more emphasis on sustainable energy in their National Strategic Reference Frameworks and enhance the importance of this field for Management Authorities when defining the priorities and budgets in their OPs [27].

5.2. Bankable energy efficiency project pipelines

Financing is not a panacea in itself and further enabling policies are needed. Ensuring mechanisms for project development and delivery is instrumental in generating a steady flow of investment ready projects.

Every project idea, independent of its complexity, needs a certain development process to establish if and under what conditions a project is feasible, profitable and bankable. Once a project is identified, preparing a feasibility study and a business plan are key elements in project development.

A feasibility study typically contains analyses of individual parts of proposed projects, comprising a market analysis; a technical analysis; an economic and financial analysis, including a sensitivity analysis; an evaluation of other factors; and a risk assessment. The feasibility study is the basis and main tool for making the decision on project implementation.

The subsequent business plan only addresses one project variant derived from the feasibility study, making a practical projection of procedure and providing a clear and comprehensive description of the project. Business plans show what is to be done and how to successfully implement the project. It is the business plan that points to the legal entity to implement the project, providing project information to the FI and presenting market evaluation, entrepreneurial model of project implementation and financial plan and financial projections, [34]. The financial plan describes the structure of financing, presenting existing and required sources of financing (selected scheme of financing), a disbursement plan and the role of the financial institution. Because the constant

ability to pay liabilities in time is the most important assumption for successful project implementation, the overall project evaluation should be based on a project cash flow analysis[24].

The range of further tools available for ensuring bankable EE project pipelines includes:

- Targeted communication about the profitability of EE investments;
- Programmes and technical assistance facilities that build the capacities of market participants to develop and structure finance for projects, most notably providing training for feasibility study and business plan preparation across a range of possible project proponents. These facilities can target both public authorities and private actors (such as ESCOs and SMEs) and can be channelled via appropriate local authorities or chambers of commerce.
- With a view to the need to create bankable project pipelines and the significant differences among MS in terms of taxation and accounting regimes, procurement, budgeting etc., there is a need to developing MS specific packages that can assist and guide project proponents – especially local authorities – through specific issues and procedures related to e.g. energy performance contracting and public procurement in their national context. This process can build on the outputs from various IEE projects (EESI, Eurocontract, Clear Support , Clear Contract, etc.). Such national packages can unleash a significant replication potential across local authorities once successfully implemented in one city/region. One communication channel for such an option can be the Covenant of Mayors.
- Further supplementary policies, such as energy audit mandates or monitoring of energy consumption of public entities and large private energy users with a possible commitment and/or incentive to implement economically feasible projects[25].

Improving the legal basis for the removal of specific barriers has been shown to affect the perceived risks of contractual arrangements. For example, in the Czech Republic the law supports the right of an ESCO to collect payment related to their customers' energy savings. In Hungary, local governments that have a contract with an ESCO can 'freeze' their energy costs in the budget. In contrast, in some countries the legal framework does not allow municipalities to retain the savings derived from implementing EE projects.

[24] More details of cash flow analysis and evaluation are available from the BEEP project: "bankable energy efficiency projects" at http://www.save-beep.org. A guide to cost-benefit analysis of investment projects is available at http://ec.europa.eu/regional_policy/sources/docgener/guides/cost/guide02_en.pdf . The CF SEP project provides suggestions and examples on preparing project proposals with hints on feasibility study and business plan preparation in two manuals available at http://seven.svn.cz/CF-SEP/Outputs.htm

[25] See the ESCO status reports 2005 and 2007 prepared by the JRC on deploying strategies to support the ESCO industry. A new status report is currently in preparation and is expected to be published in 2010.

ANNEX I FINANCING ENERGY EFFICIENCY: COUNTRY SHEETS

The country sheets present an attempt to review both public funds available for energy efficiency projects and to give an overview insofar as possible of the activity of commercial financing institutions with respect to energy efficiency. The country sheets are not intended to provide a complete and detailed inventory of all existing financing tools for energy efficiency in each Member State and it is impossible to cover all aspects to the depth required in a snapshot such as this. The country sheets focus on the major financing tools in each country.

Data presented in the country sheets comes from various sources, including an expert questionnaire administered by the JRC in the summer of 2009 and targeting energy efficiency officials and businesses in the MS (response rate: 15 MS), recent and comprehensive studies on the topic (such as [30, 35]) and the annual workshops hosted by the JRC on policies and financing for improving energy efficiency.

AUSTRIA

In Austria, financing of energy efficiency improvement measures is based on three main financing types, mostly with a mix of all types within the same project: Financing by the user/consumer, public subsidies, and commercial bank loan financing. Regarding public subsidies to the residential sector, the Austrian market is characterised by different federal, regional and private subsidy schemes. Subsidies for energy efficiency improvement measures in non-residential buildings are administered by one body, but are also facilitated by a number of federal and regional information and advice programmes. Banks are offering special credit lines for energy efficiency measures.

There is a long tradition of state subsidies for new construction and renovation of residential buildings. These subsidies are administered individually by the nine Austrian regions ("Bundesländer"), and amount to a total of around 1.78 billion Euro/y. A majority of dwellings are constructed or renovated with support of public subsidies. With two constitution-based treaties (2006 and 2009), the Federal government entered into a process of harmonisation of the regional subsidy schemes, including also energy efficiency standards for the granting of subsidies. As a consequence, the regional subsidy schemes are now tied to minimum energy reduction. Most regions have also introduced increasing subsidies for increasing thermal quality of the buildings, and extra subsidy schemes or direct grants for the use of renewable energy sources such as solar thermal collectors, biomass heating systems or heat pumps. In some regions, the granting of a subsidy is tied to the utilisation of energy advice in the planning phase of the new construction or renovation project. In most regions, energy certificates are compulsory when applying for state subsidies.

As part of Austria's economic stimulus package, additional 100 million Euro worth of federal subsidies were announced, commencing April 2009, for the thermal refurbishment of buildings. Insulation and window replacements received a 20% subsidy up to a maximum of 5,000 Euro/ single-family house. Efficient boilers are also eligible, but only if thermal improvements are already included in the refurbishment. Required energy savings should either amount to a 50% reduction in heating demand, or demand of no more than 75kWh/m^2/year.

Public subsidies for energy efficiency improvements in non-residential buildings are administered by the Kommunalkredit Public Consulting GmbH, a firm designing and delivering services for the Austrian public administration. The 16 different types of grants provided by Kommunalkredit have a public/private hybrid nature, a national coverage and address enterprises and public bodies, with an upper threshold of 200,000 Euro and 30% of total environmentally relevant investment costs (lower thresholds ranging from 5,000-35,000 Euro). These grants show a great differentiation with regard to the EE and RES applications. They finance and cover almost all small and medium scale technologies available on the market. Most of the grants are indeed de minimis subsidies of up to 30% of total environmentally relevant investment costs.

In March 2001, The Federal Contracting Initiative for public buildings was launched, following a successful pilot project in 64 federal schools with a usable floor-space of more than 500.000 m^2. By 2010, around 400 buildings (schools, administration buildings, ministries, law courts, prisons, parks, etc.) have been modernised with Energy Performance Contracting tenders, with an average of the guaranteed savings of around 20%. The total amount of annual savings is around 3.5 million Euro of energy costs. The programme is still continuing: for 2010 tenders for additional 92 buildings are in preparation. By creating a steady demand, this programme is a main driver for the EPC market in Austria.

As a complement to public subsidies, the umbrella organisation of oil retailers offers a subsidy for the modernisation of oil heating systems in residential buildings. With a simple administrative procedure, private persons can get a subsidy of 2000 Euro, which amounts for 20-50% of the

costs of a new condensing boiler. The subsidy campaign has started in 2009 and is planned to run until 2016. The budget and the level of the subsidy are adjusted yearly (budget 2009: 12 million Euro, subsidy 2009: 3.000 Euro; budget 2010: 14 million Euro, subsidy 2010: 2.000 Euro).

Information and advice activities for energy efficiency and increased use of renewables are provided by the Federal klima:aktiv programme for different sectors: residential buildings, private non-residential buildings, industrial processes, mobility etc. In most of the regions, there are also regional programmes with the same target groups; in some regions, these programmes are co-operating with klima:aktiv, in other regions, they work in parallel.

Beside subsidies and the own budget of the customer, commercial bank loans are the third main source of EE project financing. Almost every large bank offers special credit lines for energy efficiency measures, mostly combined with information and advice activities such as online energy efficiency calculators, expert advice days in rural bank offices, vouchers or discounts for good energy certificates etc. Most of the banks also advertise special interest rates for renovation projects, some banks also offer special credits with easier administrative procedures for smaller efficiency measures. All of these financing products can be combined with the above mentioned state subsidies. Most banks also include the identification and combination of state subsidies into their information and advice activities.

BELGIUM

All three Regions award subsidies for a range of energy saving or renewable energy investments, as well as for energy audits or energy accounting schemes. At the federal level, the purchase of energy saving equipment is being encouraged by fiscal deductions for energy saving investments.

Federal

Since January 2003, the Federal Public Service (FPS) of Belgium offers tax reductions for individuals undertaking EE and certain RE investments in their homes. These tax reductions cover one or more of the following 8 measures: replacement or maintenance of water heating systems, installation of solar water heating system, installation of solar PV, installation of geothermal heat pump, installation of double glazed windows, roof insulation, installation of thermostatic valves or regulated thermostats undertaking an energy audit. The maximum amounts of tax reduction have progressively increased, and for the 2008 fiscal year the tax reduction amounted to 40% of the expense for all measures, up to a maximum amount of 2650 Euro per household.

There is a VAT reduction – from 21% to 6% – for all refurbishment of privately owned homes over five years old (not just for energy efficient refurbishment). Both materials/equipment and labour are eligible. For the 2009 tax year only, the VAT reduction is also valid for new homes at up to 50,000 Euro per home.

Flanders

In 2009, home-owners and housing providers with at least 40m^2 of loft space who improve their loft insulation (or insulate it in the first place) to a high standard, can receive up to 1000 Euro (depending on surface area) subsidy from the Flemish Government. The Flemish government also has subsidies for solar PV and for very low energy refurbishment. For new homes specifically, the subsidy increases the higher the as-built energy standard is.

Walloon

Since 2004 the government of Walloon provides subsidies to private sector entities in industry, agriculture and services wishing to invest in energy efficient equipment in lighting, variable speed drives, refrigeration, heat recovery, burners, large space heaters, condensing gas boilers, heat pumps, microgeneration and high efficiency cogeneration, thermal regulation, gas heating. The maximum subsidy is limited at 7500 Euro/y per location, except for condensing gas boilers of over 500 kW capacity, for which the limit is 12 500 Euro.

Since 2002 the government of Walloon provides subsidies to private sector entities in industry, agriculture and services wishing to undertake an energy audit or pre-investment feasibility study. The studies must be undertaking with a view to invest in energy efficient or renewable energy systems, high efficient cogeneration, or to elaborate an energy efficiency action plan. The subsidy covers 50% of the cost of the study. For companies that have signed a voluntary agreement with the government on energy efficiency, the subsidy covers 75% of eligible costs, and can cover services provided internally within the company.

The Walloon government also provides subsidies for the establishment of an energy analysis system. The subsidy covers 50% of eligible costs, which are the purchase and installation of necessary equipment (measurement instruments, accessories, wiring, software etc.), their installation, and training personnel in the system's use. Companies developing products that

contribute to increased energy efficiency can benefit from a 50% subsidy when seeking technical certification, covering test trials and administrative costs.

The MEBAR programme subsidizes low-income households to improve the energy efficiency of their dwellings. The Region's AGEBA funds go to municipal, provincial and regional buildings, and ECHOP funds go to schools and hospitals. These latter two programmes were harmonised under a new scheme, called UREBA. The Region also provides a subsidy to municipalities for the replacement cost of inefficient public lighting (EP-URE programme). The subsidy covers some 70% or more, depending on the energy efficiency of the replacement.

Brussels-Capital Region

The Brussels-Capital Region allocates subsidies to municipalities, local public bodies, schools and hospitals. Subsidies amount to 20% of the investment costs of energy efficiency measures (50% in the case of energy audits).

BULGARIA

The Bulgarian Energy Efficiency and Renewable Energy Credit Line (BEERECL) offers loans, technical assistance and grant support to Bulgarian industrial energy efficiency and small renewable energy projects. The facility is financed with 50 million Euro from the EBRD, into which is blended a 10 million Euro grant facility from the Kozloduy International Decommissioning Support Fund (KIDSF). Private sector banks that participate in the facility on-lend to projects in the range of 50,000 to 2 million Euro. As an added incentive, loan recipients also receive grant support towards the principle of the loan, 7.5% for energy efficiency projects.

KIDSF and the EBRD have also launched credit lines of 50 million Euro to Bulgarian banks as part of the Residential Energy Efficiency Credit Line for on-lending to the residential sector for improvements in energy efficiency both in blocks of flats and individual houses. In both programmes banks are actively participating as partners and administrators of the funds.

The Bulgarian Energy Efficiency Fund (BEEF) provides loans, partial credit guarantees (80% on a parri passu basis and 50% on first loss basis), as well as portfolio guarantees for ESCOs and for the residential sector. The ESCO portfolio guarantee covers up to 5% of defaults of the delayed payments of an ESCO portfolio; with this guarantee an ESCO can get better interest rates on its debt with commercial banks. Since delays in payments are more probable than default of clients, the BEEF acts as financial buffer to take the shocks.
The residential guarantee works in the following way: BEEF helps the households in a building to develop a project. Then a company is selected to implement the investment. The bank gives the funds to the project developer, but the repayments afterwards come from the individual households. Each household pays proportionately to their built-up area. BEEF guarantees that it will cover the first 5% of defaults within this block (or portfolio of blocks). Statistically the default rates in customers' loans are from less than 1% in some banks, to about 2.5-3%, so a guarantee of 5% will cover fully the risk of the commercial bank. This product is being developed as a partnership with commercial banks.

An agreement signed in 2008 between the Fund for Energy Efficiency and Fund Energy and Energy Savings, whereby the former guarantees the receivables from energy service contracts in the public sector with a total amount of 16 million BGN (approx. 8.2 million Euro) of receivables. This is intended to pave the way to a similar portfolio guarantee for industry.

The National Programme for renovation of the residential buildings was adopted in 2005 and has multi-family residential buildings as a priority, envisaging the renovation of around 700,000 dwellings over the period 2006–2020. The state supports the panel dwelling owners by means of direct subsidy of 20% from the renovation total.

Under the National Strategy for financing the building insulation for energy efficiency (2006-2020) the state grants a subsidy for measure implementation, audits and certification to state owned buildings, municipal owned buildings and private multi-family residential panel buildings.

An amendment of the Local Taxes and Fees Act from 2007 changed the 2005 provision for building tax exemption for the owners of buildings, linking the duration exemption to energy performance of the building - for buildings in category A: 7 years (10 years if RES are used), for buildings in category B: 3 years (5 years if RES are used).

CYPRUS

The government grant schemes are the main instruments for assisting the financing of investment in energy saving. Any energy efficiency technology which can achieve primary energy saving of 10% is eligible. The grants are available through the Energy Fund created by imposing a levy of 0.22 cents/kWh for all categories of electricity consumers (10 million Euro/year). The scheme covers the public sector and residential sectors and allows financial support in the form of grants of 30-50%. The grants scheme will apply until the end of 2010. Afterwards another scheme will be drawn up.

There are performance targets as to what should be achieved with public funds, which are related to the fund disbursement. The intention is that 50% of residential buildings and service sector buildings as well as 60 % of buildings in the public sector should be insulated in 2010, and all buildings in all sectors should be insulated in 2020. The penetration rate of the measure "Replacement of old boilers with new ones with a high-energy performance" is planned to be 25% for 2010 and 50% for 2020 of the existing central heating boilers in the residential sector, while the penetration rate in the public sector is 50% and 75% respectively. Under the measure „Use of high efficiency air conditioning systems" the targeted penetration rate of new, energy-efficient units is 75% in 2010 and 100% in 2020 of the total installed units in the residential and tertiary sector.

The targeted penetration of energy-efficient electric appliances (this measure applies to the residential sector only) is 75% in 2010 and 100% in 2020 of the total appliances. The targeted penetration rate of the „Use of energy-efficient lighting bulbs" is 80% in 2010 and 100% in 2020 of the conventional lighting bulbs in the residential and tertiary sector while through the „Automations in lighting" the intended penetration rate is 50% (in 2010) and 80% (in 2020) of the total buildings of the tertiary sector.

Since 2007 a grant scheme is operated that targets efficiency improvements in industry. Heat recovery, cogeneration, efficient electric motors, automation devices, insulation and efficient lighting etc are typical applications.

One energy service provider operational in Cyprus pointed out that in practice there is a high degree of specialization and a clear sharing of competencies for the providers of financing products for energy efficiency with CFIs being the main source of financing for industry and the commercial sector, while the Energy Fund of the government being the main finance provider for the residential sector. The main financial products are commercial loans and the majority of EE projects financed target buildings (public, private residential and non-residential).

CZECH REPUBLIC

The majority of EE financing in the Czech Republic is carried out as a combination of state programs, providing a part of the investment and CFIs, ensuring the co-financing. The most common financial products used are commercial loans, soft loans (e.g. for refurbishment of prefabricated buildings), grants and investment subsidies, and to a limited extend EPC. The majority of projects financed concern district heating, private buildings (residential and non-residential), public buildings, as well as industry.

Commercial banks are active in (co-)financing EE via loans. Two of the local banks (CMZR, CSOB) work in cooperation with European credit institutions. CMZR Bank, in agreement with the German Development Bank (KFW), provides municipalities with a loan supporting medium and large scale investments for infrastructures for EE and RES. The other product is a dedicated loan for environment regeneration and minimization of manufacturing energy requirements, offered either directly or in cooperation with European financial and credit institutions and addressed to enterprises. The third financing product is a comprehensive set of services and products to support the preparation and implementation of innovative energy projects concerning energy savings and renewable energy. The program offers information, consulting, financing and project management services.

In the period 2003-2008 there was the CEEF programme under the IFC with two main commercial banks linked to it (•eská spo•itelna and CSOB).

The major state programmes are based on funds from the Structural Funds: there are two main operational programmes financing EE: EKO-ENERGIE (managed by the Ministry of Industry and Trade) and OP Environment (managed by the Ministry of Environment). Both EE and RES projects are supported by these programmes. The EKO-ENERGIE program is designed primarily for SMEs. The program offers wide opportunities for reduction of energy demand by thermal insulation, including subsidies up to 40 % for businesses. The program is managed by the Ministry of Trade and Industry and it is being implemented by the Government agency CzechInvest.

The National Environment Fund: Operational Programme Environment grants a subsidy to towns and cities, communities and the institutions of government administration, as well as to R&D institutions, legal and physical entities and non-profit organizations. The supported projects include reduction of energy by improvement of thermal insulation properties of walls and roofs, replacement or reconstruction of insulation materials. The subsidy can amount up to 85% of the total project costs but in practice, given the high number of applicants, the subsidies amount to about 60% of the costs.

The National Environment Fund 'Green to Savings' (2009-2012), set up under the Green Investment Scheme of the Czech republic, is anticipated to provide subsidies for up to 250,000 households. It is designed for households and the supported measures go beyond the regulation. Citizens can apply for subsidies for thermal insulation of apartment houses, non-panel technology and the installation of sustainable power resources for the production of heat, such as solar collectors, heat pumps or biomass boilers (includes all the available types in the country). The program is divided into three parts. One focuses on energy savings in heating, the second supports newly-built houses of the passive energy standard and the third supports the use of renewable resources for space and water heating. The extent of Government subsidies differs in each of the categories, with most support given to complex and combined solutions. Applications are accepted by the offices of the National Fund for the Environment and offices of the largest banks with whom the Ministry signed a contract (•eská spo•itelna, •SOB, Komer•ní banka,UniCredit Bank and LBBW).

The Program Panel started in 2004 is operated by the National Fund for the Development of Housing since this program provides subsidies for reconstruction and modernization of old, panel high-rise blocks. It provides subsidies for complex reconstruction or modernization of such constructions. It is available both to the physical and legal entities who are owner or co-owners of such buildings. The government plans to strengthen the program; the banking guarantees are provided by the Czech Guarantee and Development Bank. The program includes three tools of support: national interest subsidy, banking guarantee for credit, and consultancy and support.

Finally, tax payers can deduct from the tax base 10% of the purchase price of installations such as thermal pumps, electric generators for CHP up to 2.5 MWe and other equipment.

DENMARK

The Electricity Saving Trust promotes electricity savings in the public sector and in households. The Trust is financed by the so-called Special Electricity Savings Charge of 0.006 DKK /kWh payable by households and the public sector, with annual proceeds of approximately 90 million DKK (12 million Euro).

The Trust uses the proceeds to promote specific electricity savings initiatives, prioritised according to socio-economic and environmental considerations. The Trust's use of the funds is expected to produce energy savings which are considerably greater than the total raised by the Special Electricity Savings Charge. The 2009 Action Plan of the Trust was built round two elements – permanent information campaigns, and marketing initiatives.

The Trust's subsidies to consumers who converted from electric heating to district heating are based on requirements that the subsidies to consumers were made on condition that the 2 market players that benefitted directly from the conversions should offer consumers a discount. This was because district heating power plants would acquire a new marginal customer, and local plumbing and installation firms would gain a large number of new customers.

The Trust makes use of an 'auction' process whereby the district heating power plants competed to determine the way in which the Trust's subsidy scheme would be implemented. Plants with the lowest connection charges are selected. Thereafter, fixed price agreements for plumbing and installation services are offered in the district heating areas selected. The result of the concept was that connection charges fell by an average of 15,000 DKK (2,000 Euro), while the prices for plumbing installations also fell by around 10,000 DKK (1,350 Euro) per customer. Participating companies saw their turnovers quadruple as a result of the campaign. On this basis the Trust was able to fix the subsidy at an average of 15,000 DKK (2,000 Euro), which was half the figure allocated under a previous Danish government subsidy scheme. Consumers benefitted financially from savings which were nearly 3 times the amount of the subsidy offered by the Trust.

Another source of financing EE in Denmark is the annual energy saving obligation on the utility companies (1 % of total end use – every year, see JRC report on energy saving obligations). The measures implemented always provide a package with financing. The NEEAP of Denmark points that the expenditure of this obligation is financed through tariffs and totals around 240 million DKK annually (approx. 32.3 million Euro). An agreement whereby borrowers are referred to energy companies by banks for technical advice on energy efficiency could be advantageous for the energy companies, banks and borrowers. There is already an example of cooperation between a Danish bank and the Electricity Saving Trust along these lines.

The Renovation Fund provides grants for 40% of labour costs up to a maximum of 15,000 DKK (2,000 Euro) for general home renovation, and 20% of material costs (only if they involve energy efficiency measures) up to a maximum of 10,000 DKK (1350 Euro).

In connection with the 2005 Finance Act, a political agreement has been entered into on energy saving measures. The agreement focuses in particular on energy savings in government institutions as a result of the Electricity Saving Trusts' initiative, on new energy requirements for government buildings and on a new circular on energy-efficient procurement in government institutions.

CFIs are not very active in promoting EE investments separately and there are very few ESCOs operating in Denmark. Private investments are often handled through arrangements with Realkredit Danmark. The Danske Bank Group finances the purchase and renovation of homes; in 2009 Realkredit Danmark – the Group's mortgage finance company – launched an energy calculator enabling homeowners to determine what various energy-saving renovations will cost and to get an estimate of cost savings and the possible increase in property value resulting from

the investment. Realkredit Danmark and "home" – the real estate agency of the group – are also partners in the Danish Ministry of Climate and Energy's "1 tonne less" energy campaign. The campaign provides information for homeowners about energy-saving improvements and renewable energy.

Municipalities and government are financing their activities through own funds. Larger commitments and investments may also be financed by bonds or international loans.

The most common ways to finance EE projects include grants/investment subsidies and a combination of regulatory tools and financing, e.g. energy certification, energy saving commitment. In addition, Denmark puts a strong emphasis on energy labelling for buildings, which carries concrete suggestions for viable savings projects and financing proposals. Private residential buildings, public buildings and renewable energy are the most commonly financed projects in the country.

ESTONIA

The Ministry of Economic Affairs and Communication and the Estonian Credit and Export Guarantee Fund (KredEx) have developed a Housing Development Plan 2003-2008 in co-operation with local authorities and non-governmental organisations in the housing sector. KredEx is a self-sustaining guarantee fund that offers SME guarantees, mezzanine financing, long-term funding through CFIs, export guarantees, housing financing and loan guarantees. Its funds come from the ERDF (17 million euro) and the Council of Europe Development Bank (CEB, 29 million Euro), the latter being backed by a state guarantee. KredEx provides favourable funding to commercial banks –e.g. Swedbank and SEB – who extend loans to apartment associations and take the risk of lenders. The financial product developed targets apartment buildings; measures need to save at least 20% of energy in buildings up to 2000 m^2 and at least 30% in buildings above this size. Energy audits are obligatory. The loan period is up to 20 years with an interest rate fixed at 4.8% for 10 years. Multi-apartment buildings should have at least 3 apartments and apartment associations or community of apartment owners. Most importantly, the loan is provided against cash flow, requiring no further collateral.

Hansabanka supports small scale thermal insulation investments with a financing upper limit of 78 €/m2. In addition, the Nordic Environment Finance Corporation (NEFCO) supports small-medium scale investments in EE. The financing scheme has an international coverage since eligible applicants are enterprises operating in the geographical area including Northwest Russia, Ukraine, Belarus, Estonia, Latvia and Lithuania.

The Environmental Programme is implemented pursuant to the Environmental Fees Act from the funds received from the state budget. Water management, waste management, environment management, nature conservation, forestry, fishery, environmental awareness and regional programmes are supported from Environmental Programmes. The loans of the foundation Environmental Investments Centre (EIC) are given from own funds intended for environmental investments and for the development of projects supporting sustainability and restoration of the environment.

In some cases municipalities have given financial support for lowering interest rate of loans taken by households for renovation of dwelling.

FINLAND

The Housing Finance and Development Centre of Finland (ARA) funds the refurbishment and improvement of residential buildings. The Energy Grants for Residential Buildings cover independent energy audits, external repair work, ventilation and heating system improvements and the implementation of renewable energy sources. The grants cover 40% of the actual costs of the audit and 10-15% of other measures' costs. Local authorities manage funding.

A household tax deduction has been available since 2000 for the labour costs incurred in replacing, upgrading and repairing the heating systems of small residential houses. According to the instructions issued in 2005 by the Tax Administration, 60% of the labour costs may be deducted. Initially the maximum amount of household deduction was 1,150 Euro and the house owner bears the first 100 Euro of the labour costs. The household deduction is available for the taxation of both spouses. In 2006, the basis of the household deduction was amended so that both a household deduction and an energy subsidy are available for upgrading the heating system. The amount of tax deduction has now been increased to up to 6,000 Euro (still at 60% of the labour costs) and extended to cover general maintenance and renovation of homes, including energy efficiency.

The Ministry of Trade and Industry has been supporting the energy audit activities of municipalities and federations of municipalities, and the commercial sector, since 1992. The subsidy available for energy audits is 40%. For those that have joined energy conservation agreements, the subsidy is 50%. The effects of the audit subsidies granted are included as a whole in the evaluation of the energy audit activities. Support for projects involving new technologies, amounting to 25–35% as a rule, is granted. Support for projects involving conventional technologies, amounting to 15–20% as a rule, is only granted to those that have joined the energy conservation agreements.

CFIs and financing companies are active in Finland. Both CFIs and state subsidies are common in financing EE projects. The most common financial products used by CFIs and public authorities to finance EE projects are commercial loans, leasing, and grants/investment subsidies. The majority of EE projects financed are in industry, street lighting, and public buildings. Financial crisis has cut investment budgets and also ESCO projects.

FRANCE

In France the whole system supporting the diffusion of EE applications is based on weaving together the public intervention and the offer coming from private banking institutions. France can be considered as one of the most successful stories concerning tax rebate incentives for EE. The private banking system has built its offer of financing products on the tax rebate incentives. In fact, the extra resources provided by these incentives both serve as a clear signal for individuals and enterprises to trust these technologies and as a guarantee for the banks providing dedicated to loans for EE. The high increase of the number and the typology of the different loan offers by the financial market points that the whole system is scaling up.

There are various subsidies for new buildings exceeding building regulation (demonstration projects in buildings), for energy efficient building renovation (OPAH, PALULOS), for investments in renewables (solar and wood for HW and SH) and for energy audits (audit subsidies in buildings, high environmental quality of buildings – HPE label). Direct subsidies through ADEME or ANAH reach about 300 million Euro/y.

The ANAH subsidies target the rehabilitation of existing buildings older than 15 years, while the PALULOS subsidy program is for rental social housing dating before July 1981. In the latter case subsidies are attributed as a % of renovation costs up to a maximum of 13 000 Euro per housing unit. The Planned Operations for the Thermal and Energy Improvement of Buildings (OPATB) program targets both the residential and tertiary sectors and seeks to mobilise all local participants in the building sector, while the AAP PREBAT program targets the realisation of low consumption buildings, whereby grants are disbursed at the level of 40-80 Euro/m² in new buildings and 50-100 Euro/m² in retrofits.

Regional and local authorities often have additional funding, for private households (in house RES) and their own public non residential building.

Since 2009 France makes use of no-interest loans for energy retrofits ("éco prêt à taux 0, ECO PTZ), often referred to as ECO-MORTGAGE. The loan is up to 30,000 Euro over 10 years. Fields of actions are: insulation, heating and hot water systems, heating with renewable energy, and other. In social housing the loan is available in all French banks for large refurbishment projects (at least 2 different kind of tasks).

Preferential loans for retrofitting social housing Eco Pret Logement Social apply for 2009 and 2010 with a 1.9% interest rate. The loan is up to 16 000 € loan for 15 years, available at the Caisse des Dépôts for refurbishment of social housing.

The OSEO Innovation offers a combination of grants and zero-interest advances to SMEs and larger enterprises for research, development, innovation and deployment activities, with the latter accounting for the majority of financial support. The advances are repaid in accordance with the financed project's level of success. Grants and interest-free advances are also provided to public research organisations to help with deployment of technologies to the marketplace and to enterprises. OSEO can also offer loan guarantees that cover 60% of a loan taken for research, development and/or deployment activities.

Since January 2008, the Industrial Innovation Agency (AII) has been incorporated into OSEO, along with any existing projects it was supporting. The new programme with a budget of 300 million Euro for 2008 stemming from this fusion is called Strategic Industrial Innovation (ISI) and supports collaborative projects between research centres and enterprises, aiming at research, development and deployment. Two such projects are the HOMES programme, led by Schneider Electric, on energy-efficient construction and the LowCO2Motion programme, headed by the car supplier Valeo, on research and development to improve vehicle engine efficiency and economise on fuel consumption when vehicles break and stop.

FOGIME is a loan guarantee fund for SMEs' energy sustainability (efficiency and renewables) investments, created as a co-operative effort between the French development bank for SMEs (BDPME) and ADEME. FOGIME budget can guarantee up to 244 million Euro of loans to the private sector. Eligible investments include: high performance production, use, recovery and energy storage equipment; energy efficient modifications of production processes and renewables. The guarantee covers medium and long-term risks (2-15 years) and insures the risk taken by the financial institution providing the loan. The guarantee covers 70% of the loan in comparison to 40% average coverage rates for other SME projects covered by BDPME.

In addition tax deductions and tax credits play a major role in French energy policy. There are a number of specific tax instruments that directly or indirectly impact the housing sector. The EE tax credit scheme is worth about 2 billion Euro/y.

- Income tax reductions and tax credits for maintenance, retrofit and renovation for principal residences and income tax credit for energy efficiency materials (2005-ongoing);
- Tax incentives for investments in the rental sector for new or rehabilitated property (Borloo and Robien schemes);
- VAT reductions: VAT reduced to 5.5% (from 19.6%) applies to services and equipment such as heating installations, individual heating and hot water equipment, solar energy systems, biomass systems, heat pumps, façade insulation, window replacement, wood and similar biomass products used for heating. In some ways it limits EE as it does not incite comprehensive building renewal;
- Property tax exemption: Supports the State Agency for the Improvement of Housing (ANAH) subsidy program. Rented dwellings can benefit from a property tax exemption for a period of 25 years if they have been improved with the aid of ANAH subsidy and if part of social housing.

In addition a number of CFIs offer preferential loans for EE. Banque Populaire d'Alsace provides preferential loans for new buildings and the renovation of existing ones. The loans are refinanced by special saving products, public credits from ADEME and the region of Alsace, and by the bank's own resources, e.g. by accepting lower margins. The loans of Region Nord-Pas-de-Calais (NPC) are targeted to the renovation of existing buildings constructed before 1975. Beneficiaries are owner-occupiers, owner-landlords and small private social landlords. The requirements are beyond the RT2000 for some elements.

In October 2006, the French Government announced the creation of a 10 billion Euro fund for the funding of domestic energy conservation projects with low-interest loans. Under the LDD (Livret de Développement Durable)[26] banks finance the development of SMEs. Banks must use a portion of these funds to offer preferential loans for residential energy conservation projects. The LDD cap has been raised to 6000 Euro/person to raise additional funds for these loans. As of 2009 the account pays tax-free annual interest of 2.5%. In 2008, banks had to dedicate 2% of the funds to energy conservation loans, rising to 5% in 2009 and 10% thereafter. Preferential loans can be awarded to individuals, co-properties and entrepreneurs for the purchase and installation of: energy efficient boilers; thermal insulation (walls, windows, shutters); thermal regulation equipment; equipment producing energy from renewable sources; space and water heating equipment using wood or other biomass; heat pumps. Applicants must provide the bank with documents from the equipment installer, certifying that the equipment and installation meets the required energy efficiency criteria.

[26] Previously operated as the CODEVI (Compte pour le Développement Industriel).

This financial measure is complementary to the 2005 tax credit scheme. The acquisition of residential energy efficient equipment entitles the buyer to a price reduction (tax credit scheme) and a low-interest loan at the same time (LDD measure).

The GIPEC loan, also called 1% Housing, including Pass-Travaux scheme, which attributes loans for the improvements of a main home, including EE measures. The amount of the loan may be up to 100% up to 9600 Euro, with a 10-year payback. The loans are refunded by employer participation at a rate of 0.45% of the company's salary expenditure (earlier this rate was 1%, from which the name of the scheme came). Beneficiaries are employees of the industrial and commercial sector with at least 20 employees.

Other schemes include the P.A.H. loan of the Caisse d'Allocation Familiale, PAS (Prêt accession sociale) and PC (Prêt conventionné).

FIDEME (Fond d'Investissement de l'Environnement et de la Maîtrise de l'Energie) is a public-private mezzanine fund for environment and energy efficiency aimed at helping developers bridge the debt-equity gap. It was set up through the joint efforts of ADEME and NATIXIS in 2002, with the specific aim of supporting private investors. Through this fund ADEME has invested over 15 million Euro in junior debt that effectively provides a loan guarantee to senior lenders, who have contributed another 30 million Euro to the fund. FIDEME is an innovative structure dedicated to project financing for sustainable development and for boosting investment volumes. FIDEME shows how double leveraged mezzanine finance can address the lack of investor equity in project finance. A typical structure would be composed on 80% senior debt, 10% FIDEME mezzanine loan and 10% developer equity [14].

Within the framework of the crisis plan, France is making 200 million Euro/y available for public non residential building.

The typical sources of financing for EE projects are commercial financing institutions and state authorities. Caisse des Dépôts is the major CFI financing EE projects; but all commercial banks (BNP Paribas, Crédit agricole, Société générale, HSBC, Caisse d'épargne, Banque populaire, Crédit Mutuel, Banque Postale, …) are financing EE, plus specific household financing banks (Crédit Foncier, Crédit immobilier de France) and specific EE banks linked to energy distribution groups (Solféa-GDF, Domofinance-EDF).

The most common financial products used to finance EE projects are preferential (soft) loans, grants/investment subsidies, and tax or other fiscal incentives. The majority of EE projects financed are in private residential buildings and in social housing. The same EE project can benefit from different sources (for example 0% eco-loan + EE tax credit may add up to a 40-60% subsidy equivalent).

GERMANY

The supply side of the market for specialised financial products for RE/EE in Germany is represented by both public and the private banking institutions. The policy in Germany is to provide economic incentives other than tax.

All government's funding are managed by the KfW (Bank for Reconstruction), a non-profit banking group owned by the government (80%) and the Laender (20%). The KfW raises funds from the financial markets and transfers this capital, via commercial banks, to program applicants in the form of lower interest loans. Since 2005 additional subsidies from federal government are used by the KfW both to improve the financial conditions of the programmes and to expand their volume. Thus, the KfW offers differentiated products, with regard both to financing products and to final recipients: loans (majority) and loans combined with a grant element of 5-17.5% of investment costs targeting a wide spectrum of applicants (enterprises, public bodies, individuals and collective households).

The KfW Förderbank promotes housing construction and modernisation and energy conservation on the part of commercial enterprises and local communities. KfW funding programs target[27] around 95% of existing buildings in Germany. KfW does not accord loans or any sort of financial product directly to the investor (some public applicants are exception), but to credit institutes. At present there are the following ongoing programs in the residential and public sector:

- KfW Programme Housing Modernisation: existing residential buildings. The investor receives a long-term low-interest loan specifically targeted at EE with a fixed interest rate and repayment-free start-up years.
- KfW Programme Ecological Construction,
- KfW Municipal Loan Programme.

Within the framework of the KfW Build Ecologically Program long-term, low-interest loans for the building of new KfW 40 or 60 energy-saving houses[28], passive houses and installation of renewables-based heating technology in new buildings is provided. The KfW Housing Modernisation Program provides long-term, low-interest loans for various measures to modernise and improve housing. Especially low interest rates are granted for energy-related improvement work (eco-plus measures; thermal insulation and heating modernisation on basis of renewable energy).

The KfW also has a Special Fund Energy Efficiency in SMEs; by the end of 2008 more than 558 sub-loans were disbursed, amounting to 315 million Euro.

In addition direct grants are also available; federal subsidies target a limited number of existing residential buildings and do not provide large financial incentives. For example, the Marktanreizprogramm of BAFA provides grants for residential, industrial and public sector end users. One example are subsidies for heat pumps that produce heating and hot water; the subsidy is given per m2 of living area and is dependent upon the number of apartments in the building served. There are various schemes at the level of Laender.

As far as the private sector is concerned, the main actor is the Umwelt Bank, which offers a wide range of loans to individuals applying for investments in EE and for building passive houses. Some of the Umwelt Bank's products are linked to the programs of the KfW. All the loans have

[27] Between 2000 and 2004 about 10 million m^2 were renovated with the support of CO2 Reduction program and the CO2 Building renovation program., equivalent to about 16% of the estimated annual renovation market.
[28] 40 and 60 stands for the primary energy requirement per m2 of floor space per year.

approximately the same characteristics and requirements. The only difference lays in the amount financed and, subsequently, in the interest rate and repayment period. There are two main financing ranges: 10,000-50,000 Euro and 50,000-400,000 Euro.

The Berlin Energy Agency acts as an independent project manager to develop EE projects in public and private buildings in the City of Berlin. Funded by the State and District Municipal Governments, the BEA pools together a number of buildings and conducts pooled procurements for ESCOs to make EE and RE investments. The winning ESCO pays for the upfront cost of the retrofit project costing the building owners nothing. The ESCO is repaid over an average of 8 – 12 years from these savings. The ESCO is able to shoulder the upfront costs through a credit provided by a financial institution. BEA conducts the initial energy audits at no cost to the end-user and this information is used for the ESCO procurement. BEA used government grant funds to pay for these services. An average of 20 buildings is pooled together for each procurement. The BEA program has been highly successful and is being replicated in Bulgaria, Romania, Slovenia and Chile. It demonstrates the power of local government to act as a market aggregator and procurement agent for EE projects.

A study in the framework of the Finaret project suggests that in Germany the offer coming from the public banking institution seems to limit the development of a wide, differentiated range of financial products from the private sector, thus confirming the idea that a sound and well structured public support to the diffusion of EE technologies may hamper private offer [30].

GREECE

National subsidy schemes are the most typical sources of financing of EE projects in Greece. The public sector is providing grants to different recipients, up to 60-70% of the size of the investment. The Greek government subsidises energy efficiency projects through the EU Structural Funds (e.g. Operational Programme for Competitiveness, Development Law, etc.). The subsidy is in the range of 20-40% of the capital cost of the project.

CFIs have only recently started to become familiar with EE projects. As of late 2009 the only schemes that they are presently pursuing are special loans for PV, which are paid back on purely financial terms. Furthermore, they also finance loans for the purchase of energy efficient products with a certified/labelled energy performance. Most CFIs in Greece offer "green" financial loans for a variety of projects. However, these usually depend on the market trend at that specific timeframe. Piraeus Bank provides Green Loans targeting either individuals (mortgage loans for residential building reconstruction) or SMEs. Both financing limits and financing terms and conditions vary according to specific projects and are subject to a negotiation to be undertaken case by case. Loans by National Bank of Greece and the Agricultural Bank of Greece both have products that mostly target enterprises willing to invest in photovoltaic installations. The most common financial products used by CFIs are commercial loans. The majority of EE projects financed are industry and private non-residential buildings.

HUNGARY

The Energy-Saving Credit Fund, introduced in 1991, allows companies and local governments to apply for soft loans of up to 80% of the total investment expenditure of a single investment and up to 100 million HUF (400,000 Euro). The maximum duration of the credit is 6 years with 2-year grace period. The interest rate is variable; it consists of 1/3 of the base rate of interest applied by the bank of issue and a 2.5% interest margin.

In 2002 a program supporting the energy-saving modernisation and renewal of blockhouses built with prefabricated technology was introduced (the Panel Programme); in 2004 the program was continued under the name 'Panel Plusz'. The "Panel Plusz" loan program provides low-interest loans available for the energy-efficient refurbishment of buildings constructed from pre-fabricated panels, including insulation and heating system modernisation. Eligible energy conservation actions include change of doors and windows, thermal insulation of walls and ceilings, modernisation of HVAC systems. In 2005 the conditions were modified insofar as the state subsidises one third of the investment cost up to 500,000 HUF (2000 Euro) per flat, while flat owners in a building have been able to jointly apply for a bank loan taken by the building which is repayable over 15 years and guaranteed by the state. In some cases local governments back one third of the investment by a soft loan at 5.6-5.7 % interest rates. Thus, in the case of resident community and local government applications, the amount of the credit can reach up to two thirds of the renewal costs, with a maximum of 800,000 HUF (3200 Euro) per flat. Local governments, housing co-operatives, and housing associations of owner-occupied blocks are entitled to apply.

In late 2008 Hungary launched a Green Investment Scheme (GIS), channelling funds from the sale of Kyoto units into EE financing. The scheme provides up to 60% grant for panel houses in the framework of the Climate-friendly home program. 15 billion HUF (60 million Euro) have been disbursed as of March 2010. Grants disbursed in the framework of the National Energy Saving Program cover on average 25-30% of investment costs.

Under the Environment and Energy Operational Programme (2007-2013) support for public institutions and local governments, SMEs, DH companies, churches, and civil organisations is provided (no support for the residential sector). One priority is modernizing the energy utilization of municipal and non-municipal owned public buildings.

The Ministry of Education conducted a pooled procurement for ESCO projects and services (2005) on behalf of medium and small school districts in the country. OTP Bank provided a 200 million USD project debt facility, to provide loans to school districts, supported by an IFC partial credit guarantee.

IRELAND

Sustainable Energy Ireland (SEI) operates a number of programs that provide financial support to EE measures.

Greener Homes Scheme is a grant scheme that provides assistance to homeowners who intend to purchase new renewable heat systems. The grant is a fixed amount depending on the size and type of heating system.

The Home Energy Saving (HES) scheme provides grants to homeowners who are interested in improving the energy efficiency of their home and is open to all owners of existing houses built before 2006. Landlords and owners of multiple properties may also apply. The types of measures currently eligible under this scheme are roof insulation, wall insulation, high efficiency boilers and heating control upgrades. There is a 200 to 300 Euro grant for households who choose to get a Building Energy Rating (BER) assessment Before and After the works are completed. In the implementation stage the government will cover up to 30% of the cost of work (up to 2500 Euro).

The Warmer Homes scheme aims to improve the energy efficiency and comfort conditions of homes occupied by low-income households. It engages regional community based organisations to acquire and apply the skills to carry out the work – which includes attic insulation, draught proofing, lagging jackets, energy efficient lighting, cavity wall insulation and energy advice. Eligible homes are identified locally via networks drawn from the statutory and voluntary sector. The focus is on privately owned and rented homes, which are more diverse and difficult to access than local authority homes, and the latter are catered for elsewhere.

House of Tomorrow is a program that, among other, provides partial funding (grant) for private and social housing developments that deliver savings over 40% in energy consumption and associated CO2 emissions relative to what would apply under current building regulations. Core delivery is through Warmer Homes scheme.

Under the Public Sector Programme grants are provided for public sector design and construction of new buildings.

The Low Carbon Housing Programme is the successor of SEI's House of Tomorrow Programme. It aims to support the development of new low-carbon and energy efficient housing through providing capital grants to developers. The programme invites proposals for housing developments incorporating design and technology features that lead to a reduction in CO_2 emissions from energy use in a typical new home by at least 70% relative to a reference dwelling built to baseline Building Regulations 2005 standards. Indicative funding of up to 40% of eligible expenditure (maximum 15,000 Euro per unit) will be provided subject to various conditions.

Finally, there is a 100 million Euro insulation grants scheme.

ITALY

There is a large number of financing tools, coming from both the public and the private sector. At national level, the Finance Act allows for tax benefits of energy saving in existing residential and some VAT benefits. This provision applies both to private individuals and to companies. Eligible costs include purchase, installation and other services needed. The amount of the tax allowance cannot exceed 55.000 Euro and is granted in three annual instalments.

Another level of public intervention is represented by the large number of different incentives provided by local authorities mostly to private individuals and SMEs. Both Regions and Municipalities allocate funds for a number of investments. One example is a 2.3 million Euro guarantee fund by Regione Toscana, which in the framework of Fidi Toscana works with CFIs to encourage financing for small-scale RES, but also heat pumps, public lighting refurbishment and other EE projects. Other examples include Finpiemonte, which also has extensive CFI partnerships and provides grants to individuals or companies taking loans for small-scale RES and EE investments up to 100% of the due interest, and Mutuo Verde, whereby BCC Ravennate e Imolese has a framework agreement on financial support for RE and some EE technologies with Legambiente and Federcassse, so that no guarantee is required from loan applicants.

In the period 2007-2009 a revolving fund of 200 million Euro yearly was established by Budget Law 2007 to finance high performance micro-cogeneration plants and high efficiency electric motor substitutions (above 45 kW). A fund of 75 million Euro was created for the implementation of energy saving projects within the period 2009-2011, in particular targeting projects incorporating measures listed in the first NEEAP together with measures aimed at improving energy efficiency in public lighting, electric transport and in the household. Another fund of 50 million Euro was established in 2007 by the Ministry for Economic Development, regarding the co-financing of projects aimed at enhancing energy efficiency and environmental sustainability in industrial districts.

A Legislative Decree of the Ministry of Economic Development of 2007 foresees the implementation of energy audits in public buildings and resulting cost-effective interventions and includes a total of 8.5 million Euro in available funds to be allocated between Regions and autonomous Provinces. End-users that are eligible to apply for the energy audits scheme are: public schools, hydro systems, public lighting, public buildings or buildings for public use, residential buildings, and hospitals.

Commercial loans are the most common financing tool, but CFI are not very active in dedicated EE financing and lend on asset-terms with strong collateral; project-based lending is rare. Mortgage financing is common, as well as other asset-based lending secured by property or collateral. Leasing is not very common.

Our survey points that CFIs account for approx. 95% of EE project financing, with the remaining 5% coming from regional authorities. The majority of local public grants are tailored on small-scale investments; many cover 25-30% of investment costs. Industry, DH and CHP, as well as public lighting, appear to be the most commonly financed EE projects.

Monte dei Paschi di Siena and Banche del Credito Cooperativo are the most active CFIs. Monte dei Paschi di Siena, for example, has the Risparmio Energetico loan for SMEs, which is applicable for investments in EE and RES that are eligible for tax allowance (excluding PV).

Italy has a specific priority on sustainable energy in all its OPs under the Structural and Cohesion Funds. Italy has committed itself to develop new solutions against energy dependency, notably through Cohesion policy to the tune of 1.057 billion Euro [26]. The programme for the Southern regions specifically tackles innovation and sustainable energy.

LATVIA

Improvement of energy performance in buildings is determined as one of the priorities of the National Program on Construction from 2002.

There is state support available for projects improving energy performance of buildings. The State Housing Agency carries out energy audits in apartment buildings within the long-term program Housing Energy Performance. Programme beneficiaries are dwelling owners associations in apartment houses built in the period 1945–1990. The owners are supported financially by co-financing of 50% of the audit, by providing 50% of the renovation loan guarantee, and 10-20% co-financing of the renovation works. The support is provided by the Housing Agency and private banks in public-private partnership. A next phase of the programme for 2007-2010 has been approved with a budget of approximately 10 million Euro.

The Municipal Development Fund is an institution under the Ministry of Economy that manages a World Bank's loan for municipalities. This Fund is financing municipal infrastructure projects within period of 10 years. The Public Investment Programme is giving 30 to 35 % state subsidies for municipality's energy projects.

Latvia has established a Green Investment Scheme, in the framework of which 50-85% subsidy is provided for energy saving projects, depending on the reduction of energy consumption and the fuel saved (emission factor). There are some 70 project packages for 253 public buildings with requirement for 36.5 million LVL.

Financing from the Structural funds targets DH systems and boiler houses; in addition there is a public investment program for renovation of DH systems.

Hansabanka offers a loan for renovation of dwelling houses and improvement of energy efficiency. Potential borrowers are house associations of dwelling house owners (at least 51% of all). The bank plans to finance up to 100% of the project's value (up to 55 LVL/m^2 of residential area). The loan tenor is up to 15 years. Future cash flow and duly effected payments of management fees by flat owners will serve as loan collateral. There will be no need for mortgages on flats and personal guarantees by flat owners. The loan is repaid by increasing the management fee per square metre of flat proportional to the respective residential area occupied and the total loan amount and maturity. In order to promote use of loans, Hansabanka has concluded an agreement with the Housing Agency that provides for preparing of energy efficient pilot projects for renovation of dwelling houses and exchange of information.

LITHIANIA

The state promotes EE projects such as refurbishment multi–dwelling buildings, refurbishment public buildings, increasing energy efficiency in generation and others. There are subsidies for heating and hot water system modernisation, windows and exterior door replacement, roof insulation, insulation of external walls, glazing of balconies and RES installation. There are about 300 projects for renovation of residential buildings in the pipeline. The state provides a grant for renovating a private residential building. The other half needs to be financed by the home owners themselves. State aid allocated according to the Multi-Dwelling Buildings Modernisation Programme covers up to 50% of the amount of investments under measures supported by the State depending upon energy efficiency of the project. This measure is directly related with preferential VAT rate of 9%, which applies to services of construction, renovation and heating of residential buildings which are paid for from the state and municipal budgets.

In the scope of operational programme "Promotion of Cohesion" modernisation of multi-dwelling buildings (reconstruction of heating and hot water systems; replacement of windows; glassing of balconies (lounges) according to the joint project, reconstruction of roofs, including installation of new warmed up roofs (excluding installation of attic premises); warming up of façade walls are supported. It is planned that until 2015 150 multi-dwelling buildings will be renovated.

This OP also covers public buildings, whereby up to 100% financing can be allowed. Energy efficiency in the public sector is also financed under the "Implementation of Energy Saving Projects" program.

The Lithuanian Environmental Investment Fund provides financial support is provided in the form of subsidies and soft loans. Main financing source of the Fund – 30% of pollution taxes according to the Law on Pollution Tax.

As of 2009 a corporate profit tax rebate has been in place: the taxable profit calculated for the tax period by expenses incurred for investments can be reduced up to 35% of taxable amount of profit calculated during the tax period. In addition, natural and legal persons who implement environmental measures which reduce the emissions of pollutants into the environment from stationary sources of pollution by at least 5% as compared to the established maximum permissible pollution limit, are exempt from pollution tax when the amount of pollutants is reduced by 5%, except in cases when the measure is implemented using the funds from the state budget and also in cases when environmental protection measures are aimed at using biofuel.

CFIs finances EE projects mainly related to implementation energy efficiency measures in industry. The typical sources of financing for EE projects are CFIs, the Lithuanian Environment Investment Fund and Holding Fund for Modernization of Multi-Dwelling Buildings (JESSICA Holding Fund), as well as EU Structural Funds' support for 2007–2013. The 227 million Euro Jessica Holding Fund provides long-term loans with fixed interest rate of 3%; funds come from the ERDF (127 million Euro), the Lithuanian state (100 million Euro) and commercial banks (approximately 20-40 million Euro). The state grants a 15% subsidy if the EE measures lead to achieving C class of energy performance in the building certification and grants 100% subsidy to low-income households.

The Ministry of Finance has a project pipeline for upgrading public buildings, including the universities in the country's three largest cities—Vilnius, Kaunas and Klaipeda—as well as hospitals, theatres, museums, schools, district courts, clinics, police stations and the offices of the national road administration. The project envisages the reconstruction and renovation of 39 buildings with a total area of 230,000 square metres. Lithuania is considering employing public-

private partnerships to attract private investors. The regulatory framework and procedures for PPP have already been approved by the government.

Commercial loans, soft loans and loan guarantees, leasing, grants/investment subsidies, tax or other fiscal incentives are all common financial products used to finance EE projects. The majority of EE projects financed is in district heating, CHP, street lighting, private residential buildings and public buildings

LUXEMBOURG

In May 2008, the Ministry of Economy and Foreign Trade launched a partnership agreement to include the financial sector in supporting improved energy efficiency in the building sector. Under the agreement, participating banks offer reduced interest rates on loans financing the construction of passive houses or low-energy consumption houses. The reduction offered must be at least equivalent to a reduction of 0.125% on the interest rate for the full duration of the loan. Participating banks are awarded the status of Energy Efficient Partner, and can use the Energy Efficient Partner logo on all their communication supports. The agreement has been signed by four banks, Dexia, Fortis, ING and Raiffeisen.

Investment grants are provided to SMEs in the fields of environmental protection and the rational use of energy. The law provides for both material and non-material investments, such as licences as patents, as well as non-patented knowledge and training.

A grant called "Think climate" is provided by the Ministry of Environment. Eligible investments include geothermal, photovoltaic, micro cogeneration, solar thermal and thermal insulation. Financing limits differ according to the technology concerned: e.g. for thermal insulation up to 15 Euro/m^2 (walls) and up to 30 Euro/m^2 for triple glazed windows. Subsidies are also available for the promotion of efficient new buildings and more efficient heating systems (condensing boilers). For construction of a new low-energy or passive houses complying with the required quality requirements, subsidies may be granted calculated on the basis of the eligible reference energy area given on the energy-performance certificate drawn up: for single family houses up to 150 m^2 this can reach up to 160 Euro/m^2. There are investment cost subsidies for efficient water heaters and solar thermal installations. For instance, in the case of solar thermal installations the subsidies amount to 50% of the attributable costs, up to a maximum of 5 000 Euro for thermal solar installations without heating support; minimum specific output: 525 kWh/m2 a.

MALTA

With effect from 1st January 2006 the Government introduced a financial support scheme aimed at increasing energy efficiency at residential premises through a grant of 25% on the purchase price of roof thermal insulation material at domestic residences (subject to a maximum of 233 Euro). In November 2006, the Government introduced another financial instrument to increase energy efficiency in the residential sector. This is a scheme for grants on the purchase of household appliances for domestic use certified as efficient; grants of 20% are offered (up to a maximum of 233 Euro for cooling appliances and 58 Euro for other appliances) for energy efficient washing machines, fridges, freezers and their combinations, tumble dryers, dishwashers and air conditioners for residential use. Equipment eligible for the rebate has to be labelled A or better.

The Bank of Valletta offers two dedicated products. The BOV ECO personal loan with a reduced interest rate to individuals that targets a wide range of technologies, including solar water heaters, solar lamps, solar collectors, energy saving electricity consumption products, thermal insulation products and electric/hybrid cars. The BOV ECO Personal Loan provides a maximum amount of 23.000 Euro to be paid back within 7 years.

The Environment Financing Package for Federation of Industry Members targets enterprises for the investments in EE, RES and recycling technologies and, in particular, the purchase of new equipment. This product finances up to 116.500 Euro, and requires 20% matching funds to be raised by the applicant. The loan must be repaid within 10 year, and within the useful life of the machinery/equipment purchased.

There is a large number of financing tools, coming from both the public and the private sector. In the Netherlands, the main type of preferential loans available on the market is the one resulting from the establishment in 1995 of the tax exempted "Green Fund".

Banks having set up a Green Fund call periodically for offerings (investment limited to 47.000 Euro per investor), then banks must redistribute, in at least three months, 70% of the funds raised. The public administration certifies the selected projects to be sure of their green characteristics. In order to be financed, each project has to be evaluated by public authorities and be certified as a "Green label project". Financing limits consist in an upper threshold of 47,000 Euro/house. Interest rate is cut down by 2% with respect to the market rate. SenterNovem evaluates projects on behalf of the Dutch government and, if approved, issues 'green certificates' that are required to qualify for 'green financing'. The Green Funds are the enabler for the offer of preferential loans by private banks, including cooperative banks (Rabobank), commercial banks (ABN AMRO, ING, ASN, Fortis) and alternative banks (Triodos).

This mechanism results in a twofold advantage: investors benefit from tax exemption on the interest coming from the savings they have invested in the Green Funds, and on another hand banks easily find extra resources to manage. This case highlights how the public sector can be an enabler for private offer of financing products addressed to investments in EE. In general terms, mature and specialized financial markets can generate complex financing products built on public supporting initiatives. On the contrary, when financial markets are less involved, the intervention of the public sector in directly subsidizing end-beneficiaries is likely to have a "crowding-out" effect on private actors.

Apart from these, the Energy Investment Deduction (EIA) allows enterprises (mostly SMEs) to set 40% of the investment in sustainable energy products against corporate tax liability. To be eligible a product must meet some specific energy efficiency criteria. The allowance gives enterprises a net advantage on the purchase cost of 11% on average. The EIA can be requested for acquisition or production costs of energy efficient equipment and sustainable energy. The EID recognises five areas of application: buildings, equipment and processes, CHP, transport and sustainable energy. The energy list determines which equipment qualifies for the EID and is updated annually.

The Accelerated Depreciation on Environmental Investments scheme (VAMIL) is a tax facility offering companies the opportunity to apply accelerated depreciation on environmentally-friendly operating assets. If the asset is operational and fully paid for, it even allows depreciation of the full purchase price in the year an asset is acquired.

A combination of EID and VAMIL is permitted. Investments only qualify for the deduction if the equipment in question is on the so called "Milieulijst", a list with approximately 400 technologies.

The temporary subsidy scheme Buildings and CO_2 reduction targets housing corporations, private housing companies, investors and property developers. The subsidy is up to 15 % of the investment costs (with a maximum of 1 million Euro/project) for technical projects in existing buildings to reduce energy consumption. The eligible measures should be chosen from a list and the subsidy depends on the (deemed) amount of CO_2 saved. Possible measures include cavity, roof and wall insulation, solar hot water system, heat pump boiler and CHP installations.

The "More with Less" program focuses on enabling building owners to conserve energy with the least possible effort. The entire process, from receiving certified energy advice up to installing the required energy efficiency measures, is taken care of by the contact person of the building owner. The contact person can be the contractor, the energy counsellor, the installer, the architect; it is

s/he who is a one-stop contact point and can if needed arrange for various aspects of the programme: subsidies, energy label, offers, finance, etc. To overcome financial barriers the programme ensures fixed monthly expenses. The increase of monthly expenses for energy efficiency investments will be at least set-off by the monthly gains in terms of reduction of the energy bill.

POLAND

The main support program in residential sector is the Thermal Modernization Fund, which targets energy efficient refurbishment of buildings in Poland. The refurbishment projects must meet certain technical and financial criteria, which need to be verified by an energy audit and a financial analysis. In 2009 the Thermal Modernisation and Renovation Act replaced Thermal Modernisation Act established in 1998. The following types of investments can be granted by a premium:

- Reduction of energy consumption in residential buildings and houses (all types) and in buildings used by municipal entities for purposes of public services (for purposes of heating and domestic hot water),
- Reduction of energy losses in local distribution networks and local heat sources (up to 11.6 MW and if supplies heat to buildings),
- Total or partial replacement of conventional energy sources on non-conventional ones, including renewables and high efficiency CHP.

At least 10% reduction in energy consumption should be achieved in the case of building heating installation modernization only. This percentage increases, for example, to 15% for buildings (if building heating installation was previously modernized after 1984) and 25% for other buildings.

The Thermal Modernization premium is a repayment by the National Economy Bank of 20% of credit taken from commercial bank. It cannot exceed 16% of total costs and cannot be more than double expected annual energy costs savings (set in energy audit). It applies for credits based on commercial conditions (interest rate 7-10%) and only if the repayment of the credit has to be possible from cost savings.

Poland supports selected energy efficiency investments by the National Fund for Environmental Protection and Water Management (NFOS) and the Environmental Protection Bank (BOS) through subsidies and preferential loans.

Operational Programme Infrastructure and Environment (2007-2013) has a priority line on environment-friendly energy infrastructure and energy efficiency with a priority on thermal modernisation of public buildings and purchase of energy-saving equipment with a total budget of 65 million Euro.

The National Fund for Environmental Protection and Water Management (NFO_iGW) targets ecological projects of nation-wide or at least regional importance. There are a number of Regional Funds for Environmental Protection and Water Management with loan conditions differing slightly. In 1992, an independent non-profit foundation ECOFUND was established, which administers the financial recourses made available from debt-for-environment swap. Projects which can be financed by a grant (EcoFund) or favourable credits (NFO_iGW) include energy saving measures. The fund provides National Co-financing in the form of grants and loans of EU Funds supported projects in the field of thermo-modernization in public buildings

Another government-related source of financing for pro-ecological projects is The Bank of Environmental Protection which supplies commercial credits. The Bank has a credit line supplied from NFO_iGW and intended to support energy efficiency projects, such as replacement of existing street lighting systems, energy saving solutions in central heating and hot water supply systems.

All in all, CFIs are not very active in financing energy efficiency projects. Public authorities are active in channelling EU funds for EE. The typical sources of financing for EE projects are state

funds (grants and soft loans) and the major CFI financing EE projects is the Bank Ochrony •rodowiska S.A. The majority of EE projects financed concern district heating, private residential buildings, and public buildings.

PORTUGAL

Commercial loans are the most common financial product for EE projects, but CFIs are not very active in promoting EE project financing. Industry and cogeneration are the sectors that see the majority of EE projects financed. CFIs, state authorities, and a few ESCO companies are the typical sources of financing for EE projects in Portugal. The largest CFIs financing EE projects are Caixa Geral de Depositos, Fominvest and Inovcapital.

The Portuguese government has, as part of its Energy Efficiency Action Plan 2015, set up the Efficiency Credit scheme. This scheme, set up in 2008, offers personal low interest rate finance for households installing a variety of low-carbon measures. Loans need not be secured, but the interest rate on secured loans is half that for unsecured loans. The scheme is delivered through a number of banks with the Portuguese government supplying funds for interest subsidy.

Furthermore, there is a programme to replace 1 million large electric appliances (white goods), providing a 50 Euro bonus for the replacement with an A+ appliance and 100 Euro for an A++ appliance; old appliances must be handed over for recycling.

The "Investment and Employment Initiative" (IEI) Programme of March 2009 contains five structural measures containing several projects or actions. One measure is improved energy efficiency of public buildings (hospitals, universities, law courts, offices of public services, etc.). In 2009, an intervention in 100 public buildings with a budget of 100 million Euro was planned.

In November 2009 Decree-law 319/2009 transposed into Portuguese Law the ESD among other establishing an Energy Efficiency Fund under the Ministry for the Economy and Innovation with expected financing of 6 million Euro/y. As of March 2010 this fund has not yet been put into practice, but is expected soon.

The Efficiency Loans and the Efficiency Cheque will cover some measures reported in the NEEAP of Portugal (Efficient Windows, Thermal Insulation and Green Heat). The Efficiency loans are subsidised personal loan to finance energy efficiency measures providing for a reduction of up to 50% of the interest rate. The loans are based on agreement with FIs on subsidising lines of credit intended to finance EE investment measures. These loans must be used solely for high energy efficiency products, included in a list to be published by means of an order.

There are a number of fiscal measures planned, but not yet implemented, including the creation of an accelerated depreciation regime for investments in energy-efficient equipment and vehicles in the industry and service sectors[29], progressively aligning the tax system with that of the energy certificates for buildings (for example fiscal benefits for class A/A+ level homes).

[29] Introduced for electric vehicles.

ROMANIA

The National Multiannual Program of Thermal Building Rehabilitation aims at reducing the annual specific consumption for heating below 100 kWh/m^2. In the framework of this program refurbishment measures are funded at 50% from the state budget allocation within the budget of the Ministry of Regional Development and Housing, 30% from local authorities and from other sources, and the remaining from funds of owner associations and other legal sources. In several cases – for example in the districts of Bucharest and several cities – the local authorities cover also the beneficiaries' share either via grants or deducting a share of the citizens' part from the local taxes.

The Ministry of Administration and Interior provides financing for EE projects aiming the modernisation of municipal district heating systems and local heating systems.

International financing institutions, such as the EBRD, USAID, World Bank/GEF and UNDP/GEF, have been active in the development of energy efficiency financing. FREE, the Romanian Energy Efficiency Fund, was established by the World Bank and financed by the GEF and the Romanian Government to increase energy conservation activities and implement measures in the country. FREE offers financing, under commercial conditions, for private companies in the industrial sector and for other energy consumers in order to permit them to adopt EE technology. Investments should bring financial benefit, at least 50% of these being the result of savings of energy or of primary energy resources.

In 2008, the EBRD launched its Energy Efficiency Financing Facility (EEFF) to finance energy efficiency projects by private industrial companies in Romania. The program has been developed by the European Commission. Under the framework, the Bank will make loans to the banking sector which will then provide credits to private firms. The EEFF Facility is working with 4 commercial banks and the Romanian Energy Efficiency Fund (FREE), the Romanian American Enterprise Fund, as well as ESCOs are active in financing EE in Romania. 19 Romanian companies have received EUR 15.9 million Euro under the EEFF. Companies in the private industrial sector can receive up to 2.5 million Euro in financing for EE investments, free technical assistance with working out the relevant bankable documentation, as well as a grant of 15% of the loan's value, after the implementation and verification of the investment. Eligible for the EEFF are greenfield investments, investments in RES and those with an annual internal rate of return (IRR) below 10%. EEFF loans are intended for companies planning investments that result in 20% energy savings.

Operational Programme "Increase of Economic Competitiveness" targets EE projects in industry.

The 2000 Energy Efficiency Law from 2000 has foreseen a 50% reduction of the profit tax of ESCOs for a period of 5 years, but these facilities have not been applied as of March 2010.

The most common financial products used are commercial loans, soft loans and grants/investment subsidies. The majority of EE projects financed are in DH and CHP, as well as industry, street lighting and private residential buildings.

SLOVAKIA

A financing scheme for housing development state support was established in 1996 and amended in 2003-2004, which provides support for residential buildings, reconstruction and renovation in multi-flat buildings and single family houses. Projects aimed at energy savings are a part of the eligible activity of „residential building renovation", including thermal protection of residential building or single family house. Loans and grants are the types of support provided, with greater focus on the loan support. A subsidy up to 50% of eligible costs to the maximum amount of 500 SKK/m^2 of floor area can be granted to municipalities, housing co-operative or to associations of flat owners.

Under the Slovak Sustainable Energy Finance Facility (SLOVSEFF), EBRD provides credit lines to participating banks for a total amount of up to 60 million Euro for on-lending to private sector industrial entities for EE and RES and for on-lending to Housing Associations for EE investments in the residential sector.

Eligible projects range from energy saving measures in companies to insulation of apartment houses. The facility will be supported by grant funding of 15 million Euro grant from the Bohunice International Decommissioning Support Fund. The grant will be targeted to provide technical assistance, energy audits and financial incentives to sub-borrowers and the participating banks for the successful implementation of such projects. Projects that target reduction in energy consumption/improvement of energy performance in industry are eligible (2 million Euro maximum size), with minimum investment IRR 12% for industrial EE projects and minimum energy savings 15% for residential projects. The EBRD signed four credit lines worth 15 million Euro each to the leading Slovak banks Dexia Banka Slovensko, Slovenska Sporitelna, Tatra banka and VUB Banka in December 2007.

Until September 2008, 60 million Euro credit line was fully allocated. Participating banks have already allocated a pipeline of 388 projects at 46 million Euro, including 35 industrial EE and 245 housing projects. These have given a ground for considering another credit line and expression of interest for SLOVSEFF II have been received from the four participating banks and four new banks (CSOB, OTP, UniCredit, and Volksbank).

In the current budgetary period (2007 - 2013), EE improvements in Slovakia are funded under two Operational Programmes: "Competitiveness and Economic Growth" and "Minimization of negative influences of climatic change and support of RES". The support of the State will be granted to the private sector, mainly to SMEs, and to the municipalities (programme of the implementation of more efficient lighting).

The support scope differs for smaller and for bigger projects, smaller projects receiving min. 20,000 Euro to max. 200,000 Euro, and bigger projects receiving min. 60,000 Euro and max. 5,000,000 Euro. There are two maximum levels of support depending on the territory of the applicant: in Bratislava region 40% of the eligible costs of the project; in other regions of Slovakia – 50% of the eligible costs of the project.

The Energy Efficiency Fund provides grants to support a range of activities to support priorities of individual programs in all sectors. 600 million SKK (18 million Euro) will be allocated to the fund in the first three years. From 2010, it is expected that much of the ongoing financing of the fund will come from compulsory contributions of energy companies (through implementation of the ESD) and penalties for non-compliance with the Energy Efficiency Act.

SLOVENIA

Eko sklad j.s. (Eco Fund) offers favourable loans and guarantees for private households as well as for enterprises and facilitates investments. The facility co-finances small and medium sized environmental investments, with a particular focus on water and wastewater projects, energy efficiency and renewable energy. It is based on credit lines extended by the EIB (up to 50 million Euro in Eco Fund-III that is under appraisal as of mid-March 2010).

Public schemes include both loans and grants. The latter are exclusively addressed to individuals and households. The public sector is also offering two loan schemes targeting individuals, households, companies and public administration. Loans (in one case without any guarantee) are conceded for investments both in RES and EE, whose size is ranging from 2,000 to 2 million Euro.

There is a program for sustainable energy in the framework of the Structural Funds programme planning period for 2007-1013 with a volume of 410 million Euro. The funds shall trigger investments in primarily in the area of energy efficiency, and also in the area of renewable energy by subsidizing investments with 15-40 % of the total investment.

Unicredit Bank has two products: one targeting public authorities and one designed for SMEs. The latter is conceded (without any guarantee) for investments in EE ranging from 40,000 to 1 million Euro.

In the period 2002-2009 thermal solar systems, heat pumps combined with solar systems, biomass heating boilers and PV systems were eligible for subsidy. In the period 2008-2016 grants and preferential loans are available for energy efficiency renovation and sustainable building of new buildings, for energy efficiency heating systems, for efficient use of electricity, for efficient use of energy for households with low income. Grants are also available for companies or institutions and buildings.

SPAIN

The Institute for the Diversification and Energy Saving (IDEA) under the Ministry of Industry, Tourism and Trade has a credit line for individuals, SMEs, communities of owners or neighbourhoods, municipalities and other public entities with dedicated loans for projects concerning thermal solar energy, photovoltaic and household biomass and co-generation installations.

In addition IDAE itself acts as a financier to businesses, participating in the project definition, offering technical solutions, and financing totally or partially the investment. IDAE makes the investment directly. The equipment is owned by IDAE until the investment is repaid via the energy savings. Then installation becomes property of the beneficiary.

In the period 2008-2012 four measures are eligible for financial and/or fiscal support for sustainable energy in buildings: refurbishment of the building envelope, improvement of heating, ventilation and cooling system efficiency, improvement of interior lighting efficiency and promotion of the construction of new and refurbishment of existing buildings to very low energy standards. These are all devolved at provincial government level. According to the governmental announcement of December 2007, 1 billion Euro worth of subsidies will be provided for the refurbishment of existing residential buildings in the period 2008-2012, together with 2 billion Euro in credit for energy efficiency improvements to homes and 200 million Euro for energy efficiency improvements to schools and public buildings in large towns and cities. In addition, according to the NEEAP of Spain, a portion of the existing credit line for renovating tourism infrastructures, totalling 500 million Euro in 2009, will be set aside to finance investments that promote energy savings in these facilities.

Under the Renove Plan for Electric Appliances subsidies are offered for the purchase of new class A or higher efficiency labelled piece of equipment only if the old, inefficient equipment has been removed for recycling (fridges, freezers, washing machines, dishwashers, ovens, conventional electric or glass ceramic cooktops). The amount of the incentive varies according to each Autonomous Community with a minimum of 50 Euro per appliance

A public/private financing product, issued by Caja Rioja Bank in partnership with ICO (Official Credit Institute) and IDAE provides individuals and enterprises with loans (with leasing options) for investments in the field of RES and EE. A major bottleneck, hindering the complete finalisation of the project proposal, lies in the public-private nature of this financing scheme, often implying long evaluation procedures.

An additional financing scheme is provided by Bank Santander through a seed investment fund financing new businesses operating in RE, EE and carbonization & climate change (biodiesel and ethanol). The financing scheme addresses new companies and clients that need specific services and advice in these sectors because of lack of experience or skills (public sector and SMEs). The Bank structures a Build Operate and Transfer (BOT) operation.

Bank Santander develops, builds, funds and manages the project for the period of time in which the debt is amortized. A special vehicle company (an ESCO) is created, so a Power Purchase Agreement is agreed with the partner or third parties. Afterwards, the bank invests 100% of total capital and places the debt to the ESCO. The ESCO then signs an EPC (Energy Performance Contract), an agreement for operation and maintenance (operation & maintenance agreement) with the technological partner and the PPA with the client as well as the agreement for the provision of residual heat gas. Finally, the whole process is completed with the Bank signing the purchase agreement for the commercialization of CERs. This mechanism finances investments up to 6 million USD and the risk is lowered by the fact that the bank takes over the whole

project, that serves as a collateral, and that it shares the risk by acting in cooperation with partners providing technical expertise and adequate funding (co-investors).

SWEDEN

The Act on Tax Reduction for Certain Environmentally Enhancing Installations in Single-Family Houses of 2004 intends to stimulate certain environmental improvements in permanent buildings. It provides special investment support for energy-saving measures and conversion to renewable energy in public premises, support for purchase of energy-efficient windows and biomass boilers (30% of the cost exceeding 10 000 SEK for biomass boilers and a maximum amount of 10.000 SEK for windows and 15.000 SEK for boilers), support when converting from electric heating to a heat pump (except air heat pumps) or district heating. Public authorities can receive support for their buildings (up to SEK 10 million per building).

The Swedish Energy Agency provides subsidies to the municipal energy and climate advisory service that can be found in every municipality and supports the regional energy offices' work.

The 2010 budget sets the government spending for energy efficiency over 2010-2012 at 1.66 billion SEK. This investment will extend support for municipalities, promotion of the development, use and spread of EE technologies for homes, non-residential buildings and the retail trade. Beyond the extension of current programs, the government drive covers a number of measures within a new 5-year program for EE (2010-2014). Support will be granted to municipalities that enter into voluntary agreements on EE with the state. EE measures in SMEs will be prioritised, as well as the promotion of development, use and dissemination of EE technology.

There is a large number of public programs providing fiscal and financial incentives for energy efficiency.

The Landlord's Energy Saving Allowance (LESA) provides tax deductions to landlords who make investments in certain energy saving measures. The policy provided upfront relief (up to 1500 GBP) for capital expenditure on investment in cavity wall and loft insulation. In 2005, it was extended to cover solid wall insulation, in 2006 to include draught proofing and hot water system insulation, and again in 2007 to include floor insulation. Also in 2007, the programme was extended to 2015, and the government also sought state aid approval to extend its availability to corporate landlords.

Since 2007 there is a stamp duty relief for zero carbon homes[30].

VAT rate is reduced to 5% (from 17.5%) for the installation of certain energy saving materials and systems. This is the lowest VAT rate allowed under EU agreements and is charged on certain energy saving materials, provided that they are professionally installed in a residential or charitable property. The reduced rate covers all insulation, draught stripping, hot water and central heating controls, installations of solar panels, wind and water turbines, ground-source and air-source heat pumps and micro-CHP, and wood/straw/similar vegetal matter-fuelled boilers.

Additionally, grant-funded contractor installations of central heating systems and heating appliances and grant-funded installations of factory-installed hot water tanks, domestic combined heat and power units, and heating systems that use renewable energy also benefit from the reduced rate when installed in sole or main residence of a person over 60 or in receipt of certain benefits.

The Carbon Trust's Energy Efficiency Loans (EEL) provide interest-free loans to SMEs seeking to invest in EE measures. The loans cover expenses in equipment, installations and commissioning. An SME can borrow 5-100,000 GBP in loan, which is unsecured (no collateral), interest free and repayable over a period of up to 4 years.

In addition the Carbon Trust's Enhanced Capital Allowance (ECA) gives companies a 100% tax relief on the cost of designated energy saving equipment in the year of purchase (against taxable profits).

There are some fuel poverty programs, such as Warm Front, Warm Homes, the Home Energy Efficiency scheme and others. The Warm Front targets private sector in England and is a public grant to private households with dependent children, elderly, long-term sick and the disabled in receipt of certain benefits. Eligible households can receive up to 2700 GBP worth of free central heating and energy efficiency measures.

Warm Homes targets private sector in Northern Ireland providing grants to households on social or disability benefits, households with young children and over 60s. The latter are also eligible for Warm Homes Plus involving heating system replacement and/or upgrade grants on top of insulation measures.

The Home Energy Efficiency Schemes (HEES) provides grants for heating and insulation improvements to owner-occupiers and tenants.

The Scottish Government Central Heating and Warm Deal Program provides insulation measures and EE advice to low-income households. The Central Heating program offers central

[30] For homes costing up to GBP 500,000. Zero carbon homes costing in excess of GBP 500,000 would receive a reduction in their stamp duty bill of GBP 15,000.

heating, insulation and advice to private sector homeowners and landlords targeting homeowners aged 60 and over without central heating.

Energy Saving Trust's Low Carbon Buildings Programme provides grants for residential and public sector. The programme funds single installations in households and large-scale developments in the public and charitable sectors. Potential beneficiaries include schools, community centres and local authority buildings.

In early 2010 the government launched the "Warm homes, greener homes" initiative, which includes a new form of 'Green Finance' based on a Pay as You Save model (PAYS). The government expects this to provide approximately a third of the financing for major insulation and support upfront payments for any energy saving eco-upgrade with pay-back through energy savings or micro-generation revenue. Instead of paying for the eco-upgrade upfront, householders will be able to get finance at term such that householders will be able to cover the cost of the installation out of bill savings, and usually with a further monthly surplus as well. The finance itself would come from the private sector, as banks and others provide funding for the eco-upgrade, secured against future savings on bills.

At the moment, an important barrier to this PAYS model is that homeowners move on average about every twelve years, which is generally not enough time for the bill reductions to cover the upfront costs. The solution to this problem is to allow the cost of the upgrade to be attached to the home, not the homeowner. Householders would then only be responsible for the repayments while benefitting from the measures. This requires new, primary legislation to enable Green Finance for energy efficiency installation to attach to the property, which will be introduced to the next Parliament[31]. In principle the PAYS charge can be collected by the local authority (council tax system) or by the energy supplier (electricity or gas bill).

In Northern Ireland the Warm Homes Scheme is the main instrument aimed at tackling fuel poverty in private sector housing, targeting tenants and owner-occupiers. It offers grants of up to 850 GBP for the installation of insulation measures (including boiler jackets and window and door draught insulation) and energy advice.

The Home Energy Efficiency Scheme (HEES) in Wales provides grants for heating and insulation improvements not only for owner-occupiers, but also to tenants. There are two levels of the scheme for those receiving social benefits, the first targeting households with young children or pregnant householders. The second level (HEES Plus) awards grants of up to GBP 3 600 to those over 60, single parents with young children, disabled or chronically ill householders, and those with a disabled young child. Householders over 80 automatically qualify for HEES Plus.

The public sector has access to ring-fenced, interest-free, conditional grants to invest in EE, through Salix. The Low Carbon Buildings program offers grants to public sector and charitable bodies for the installation of microgeneration technologies.

Since 2004 Scotland has run the Public Sector Central Energy Efficiency Fund, which is a revolving loan fund that provides financial assistance to help Scottish local authorities, Scottish NHS Boards, Scottish Water and the Scottish Higher and Further Education sector acquire and install energy efficiency and microgeneration technologies through interest-free loans.

Funded by the Scottish Government, the Energy Assistance Package gives advice and support to help maximise income, cut fuel bills and make homes warmer and more comfortable. It combines and replaces the Central Heating and Warm Deal programmes in Scotland.

[31] See http://www.decc.gov.uk/en/content/cms/what_we_do/consumers/saving_energy/hem/hem.aspx

ANNEX II OTHER FINANCING

I. ECONOMIC RECOVERY PACKAGES

Under the EU Economic Recovery Plan a coordinated fiscal stimulus has been put forward equivalent to 1.5% of the EU-27 GDP (200 billion Euro). As of mid-2009 800 new recovery measures have been communicated to the Commission. When it comes to energy efficiency – in particular energy efficiency in buildings – measures evolve around a combination of tax, soft loans and grants, with some schemes specifically targeted at low-income households and some countries having grants for low energy buildings. There are some uncertainties about the timing and financial envelope of the measures, yet a few promising measures included in the economic recovery plans of different countries deserve attention, such as [32]:

- Belgium: increase of existing fiscal incentives for investments in energy efficiency (federal), 30 million Euro for energy efficiency works in housing (Wallonia) and PPPs projects for low energy schools (Flanders);
- Spain's Plan Renove Vivienda: subsidies for the rehabilitation of existing housing and buildings focused on energy efficiency and subsidies for high energy performance new houses;
- France: Eco-prêt à taux zero (0% interest rate loans up to 30 000 Euro/dwelling for new construction or renovation matching technical requirements), Eco-prêt logement social (preferential interest rate for energy retrofitting of 100,000 social housing in the period 2009-2010) and income tax credit for works aiming at a better energy efficiency of the dwelling;
- Luxembourg: More eligible areas related to subsidies for energy efficiency and renewable energy sources in buildings;
- Italy: Institution of a Fund to increase the use of renewable energy and promote energy efficiency;
- Poland: amendment of the Energy Law (March 2009), with subsidies and preferential loans for renovation and investment in renewable energy sources;
- Czech Republic: 240 million Euro for Panel programme (refurbishment of high rise panel buildings in state property);
- UK: Additional 75 million GBP for "Warm Front" (insulation and heating improvement for vulnerable households) and installation of 300.000 m² solar panels and 12,500 micro-generation units (mini-wind turbines) in 2009;
- Ireland: accelerated capital allowances for energy efficient equipment, 100 million Euro grants for Home Energy Savings Scheme (roof insulation, wall insulation, high efficiency boilers and heating control upgrades) and 50 million Euro for Warmer Homes Schemes (low income private homes and rented local authority housing);
- Germany: increased funds of 3 billion Euro (2009-2011) for energy efficient refurbishment of schools, nurseries, sports facilities and other social infrastructures and large residential estates and higher tax deductibility of tradesmen's services for maintenance and refurbishment work with a tax bonus doubled to 20% of €6,000 (=1.200 €) as of January 2009;

- Sweden: tax deduction for maintenance and renovation in single family houses and condominiums;
- Finland: tax credit for maintenance, repair and improvement + fixed-term grant for renovation
- Denmark: corporate innovation and EE credit, as well as energy saving in public buildings (local authorities).

Figure 5. Indicative allocation by MS, 2007-2013 (current prices, million Euro)

Indicative allocation by Member State, 2007-13
(current prices, in millions of euro)

	Convergence			Regional Competitiveness and Employment		European Territorial Cooperation	Total
	Cohesion Fund	Convergence	Phasing-out	Phasing-in	Regional Competitiveness and Employment		
Belgium			638		1425	194	**2258**
Bulgaria	2283	4391				179	**6853**
Czech Republic	8819	17064			419	389	**26692**
Denmark					510	103	**613**
Germany		11864	4215		9409	851	**26340**
Estonia	1152	2252				52	**3456**
Éire-Ireland				458	293	151	**901**
Greece	3697	9420	6458	635		210	**20420**
Spain	3543	21054	1583	4955	3522	559	**35217**
France		3191			10257	872	**14319**
Italy		21211	430	972	5353	846	**28812**
Cyprus	213			399		28	**640**
Latvia	1540	2991				90	**4620**
Lithuania	2305	4470				109	**6885**
Luxembourg					50	15	**65**
Hungary	8642	14248		2031		386	**25307**
Malta	284	556				15	**855**
Netherlands					1660	247	**1907**
Austria			177		1027	257	**1461**
Poland	22176	44377				731	**67284**
Portugal	3060	17133	280	448	490	99	**21511**
Romania	6552	12661				455	**19668**
Slovenia	1412	2689				104	**4205**
Slovakia	3899	7013			449	227	**11588**
Finland				545	1051	120	**1716**
Sweden					1626	265	**1891**
United Kingdom		2738	174	965	6014	722	**10613**
Interregional/Network Cooperation						445	**445**
Technical Assistance							**868**
Total	**69578**	**199322**	**13955**	**11409**	**43556**	**8723**	**347410**

III. OTHER MAJOR INTERNATIONAL SOURCES

The EBRD has a wide palette of financing instruments, both direct (loans, equity, combination of loan and equity, guarantees) and indirect (SME loans, equity funds, micro/small business programmes, credit lines, trade facilitation programme, co-financing).

The Sustainable Energy Financing Facilities (SEFFs) of the EBRD are credit lines through partner banks for on-lending to investments in EE and RES. These are catered to private industrial enterprises, individuals, housing associations. Projects must meet minimum EE performance standards. In the EU such SEFFs include Bulgaria Energy Efficiency and Renewable Energy Credit Line (BEERECL) and Residential Energy Efficiency Credit Line (REECL) in Bulgaria, Slovakia Sustainable Energy Finance Facility Framework (SLOVSEFF), as well as EU Energy Efficiency Finance Facility (EUEEFF) for Bulgaria and Romania.

The IFC promotes sustainable private sector development by providing loans and equity for viable projects, mobilizing capital from other sources, providing advisory services and implementing special programs like Commercializing Energy Efficiency Finance (CEEF). The CEEF program covered Hungary, the Czech Republic, Slovakia, Latvia and Lithuania providing two components: a guarantee program and advisory services. The guarantee program offered up to 50% IFC partial credit guarantees (first loss and parri passu) for energy efficiency investments through selected partner FIs, as well as a variety of guarantee products (individual guarantees, portfolio guarantees, other specialized guarantees). The advisory services were oriented towards direct financial support for project development (cost sharing), international best-practice through consultants, awareness raising events, FI trainings, marketing activities, etc.

Some mainstream IFC projects directly related to CEEF include

- Szemunk Fenye Project in Hungary with 115 million USD risk sharing with OTP Bank for heating and indoor lighting up-grades for municipal institutions;
- Renewable Energy Mezzanine Facility: 40 million USD in subordinated tranche investment in renewable projects;
- Estonian Wind Project: 32.7 million USD senior loan and 7.2 million USD equity for a Wind Park in Estonia;
- Block House Facility: 70 million USD risk sharing for multi-family housing EE renovations .

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