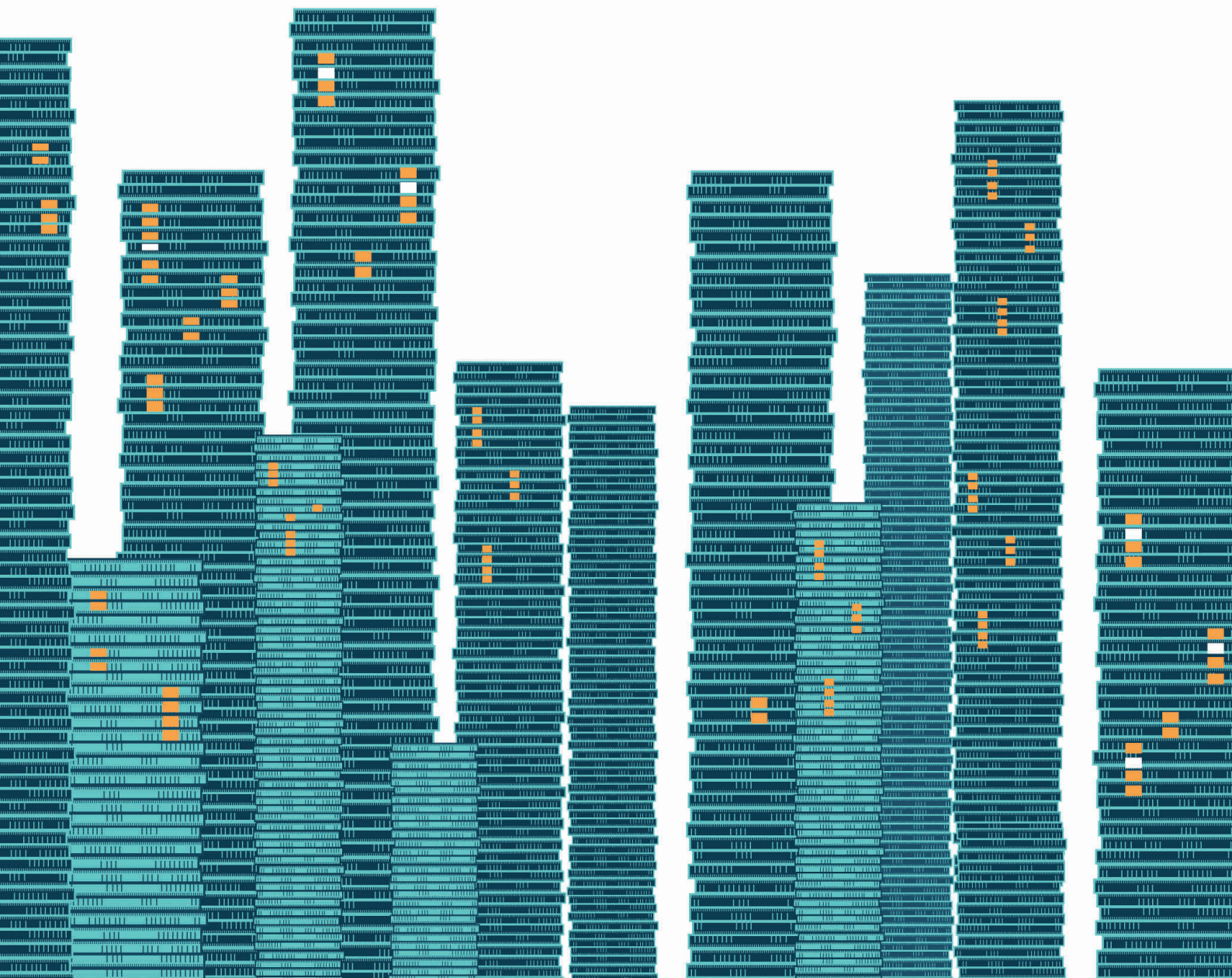


ENERGY EFFICIENCY POLICIES IN BUILDINGS – THE USE OF FINANCIAL INSTRUMENTS AT MEMBER STATE LEVEL



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KEY FINDINGS

This report is a review of the financial instruments used in the European Union based on a survey BPIE undertook in 2011 to provide a more complete picture and understanding of the European building stock and existing policies. The objectives were to give analysts and decision-makers a better analytical foundation for future policy development in the area of buildings.

With Europe's overall policy being to significantly decarbonise its economy by 80% to 95% by 2050, the building's sector, which accounts for 40% of the region's energy consumption and almost the same level of GHG emissions, must undoubtedly play a key role.

Any strategy to tackle the challenge in the buildings sector will require a significant amount of financial investment and therefore long-term political commitment.

BPIE has undertaken this review to gather key facts derived from the use of financial instruments as Europe plans the next steps in improving the energy performance of buildings. This report shows which financial instruments are already in place (2011) and makes observations – as far as possible – concerning their impact.

The review of the use of financial instruments in Europe leads to the following findings:

- All 27 Member States have on-going programmes to support the energy performance of buildings, in the form of conventional or innovative funding or through the help of external funding.
- Most of the financial instruments have targeted existing buildings, mainly in the residential sector. There are considerably fewer instruments for commercial buildings.
- Grants and subsidies are used more than other financial instruments. They are followed by preferential loans. Fiscal instruments (e.g. tax credits) are widely used but not to the extent of financial instruments such as grants.
- Many of the new Member States are highly reliant on external funding (e.g. EU Structural Funds or support through international financial institutions such as the European Investment Bank).
- There are many programmes in place but the understanding of their overall effectiveness is unclear. Very few programmes have set ex-ante goals and objectives, and even fewer have an evaluation of their effectiveness. Also, not many of these programmes have identified an on-going monitoring (feedback) process throughout the implementation of the programme.
- Few financial instruments target deep renovation or low energy buildings.
- Many financial instruments target specific technologies or building aspects, although about one-third of the financial instruments support a holistic approach.
- Non-government instruments such as Energy Performance Contracting and Energy Efficiency Obligations (White Certificates) have important roles to play because they can mobilise private funding.

- Europe-wide and international funding streams (EU Structural Funds, European Investment Bank and the like) are increasingly important and can play an even greater role in the future. There is some concern that some Member States are almost entirely dependent on such funding for their national programmes.
- There is no single solution. Funding a major retrofit strategy will require the use and possible bundling of all of the financial instruments available because of the overall cost of a deep retrofit.
- There is certainly a need to better capture the effectiveness of existing programmes in order to learn how to achieve better implementation and impact and to identify so-called best practices. The first step would be to establish well-defined and harmonised parameters for increased comparability allowing for a clear evaluation of their effectiveness.

For an effective, sustainable approach to improving the energy performance of buildings, there are a few key statements to be made that emerge from the findings:

Higher level of ambition needed: The level of ambition of financial programmes needs to rise in order to have greater impact and unlock further private investment for deeper renovation.

Deeper retrofit: A holistic approach has a better chance of achieving deeper improvements. Funding a major retrofit strategy will require the bundling of several financial instruments because of the up-front cost of a deep retrofit.

Long-term strategy: Taken as a whole, the financial instruments in place are only meeting today's level of retrofit. There is a need for scaling up based on a long-term strategy.

Conventional and Innovative Instruments: There is more to learn from existing programmes to ensure better implementation and impact. While there are many financial programmes in place, the understanding of their overall effectiveness is unclear. Relevant information on the evaluation of different programmes is often hard to collect and even harder to compare. Indeed there is no standardised way to monitor and evaluate the individual programmes. Member States use different key performance indicators.

1. INTRODUCTION

In 2011, BPIE undertook one of the largest surveys of the buildings sector in the expanded European Union. The survey included the structure of the sector, its energy use, as well as its policies and programmes. This resulted in the October 2011 report, “Europe’s Buildings Under the Microscope: A country-by-country review of the energy performance of buildings.” Until that survey, there had been few Europe-wide investigations in the buildings sector.

The BPIE report highlighted the complexity of the sector in large part because Member States had over decades separately developed their buildings sectors in terms of policies, design and construction techniques. The report showed a mosaic of building cultures and policies.

Policy-making cannot be undertaken effectively in a knowledge vacuum. With buildings representing about 40% of energy consumption and almost the same level of GHG emissions, there is a need for a strong analytical foundation for policy-making, particularly when there are priority policy concerns such as energy security and global climate change. Data and information are essential and the “Microscope” study started that data journey. The 2011 publication presented a fraction of the information and data collected. The database is now being used as an information pool to deepen the discussion in several key areas.

The 2011 report highlighted many of the market barriers that will impede such levels of energy performance improvements. The major set of barriers concerns the financing of such improvements. While the investments are considered cost-effective over the lifetime of the building, there are undoubtedly high up-front expenditures. The 2011 report gave some attention to the financial instruments available in Europe but, understandably, the review was only a first step.

This report takes a closer look at how financial instruments are currently being used in Europe and provides some evidence on their effectiveness. The focus is mainly on existing buildings, because these types of buildings represents the biggest potential for reducing GHG emission. New buildings only add about 1% per year to the total building stock. If buildings are to contribute their rightful share to the reduction of GHG emissions and energy savings by 2020 and 2050, the level of ambition must be high but must also be realistic, based on a strong analytical foundation. It is estimated that, on average, buildings can achieve 75-80% improvements in energy performance. What was once considered prohibitive is now widely accepted.

The objectives of this report are: to show what financial instruments are in place during the period of the research (2011); to describe what evidence was provided in the 2011 BPIE survey to show their effectiveness and impact (supplemented by some external studies); and finally to gather key facts from the use of financial instruments as Europe plans the next steps in improving the energy performance of buildings.

First, it is important to have a better understanding of the range of financial instruments available to improve the energy performance of buildings.

OVERVIEW OF FINANCIAL INSTRUMENTS

A great variety of financial instruments are available throughout Europe to support the improvement of the energy performance of buildings. The way Member States use them vary from country to country, mostly depending on the political context. Figure 1 shows the categories of financial instruments that are used throughout Europe.¹

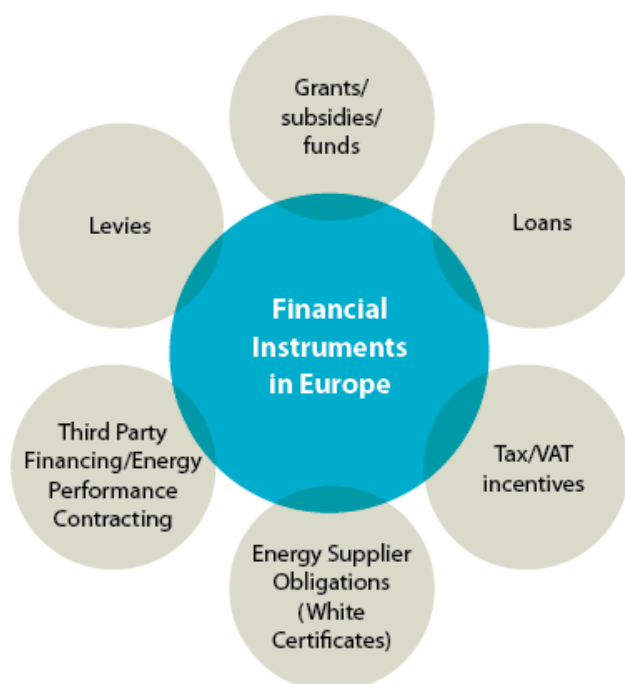


Figure 1 – Types of financial instruments supporting the energy performance of buildings

There are many types of financial instruments used in Europe. For this report, these financial instruments can be divided into two broad categories: conventional and innovative. The conventional financial instruments that have been used since the oil crises of the 1970s include: grants and subsidies, loans, and tax incentives. Levies have been used to a much lesser extent. There have also been funds (such as from international financial institutions) that often provide financing, such as loans or grants. There are also funds coming from the selling of Assigned Amount Units (AAUs), also known as carbon credits (under the Kyoto Protocol). The innovative instruments include Energy Performance Contracting (often known as Third Party Financing) and Energy Supplier Obligations (often known as White Certificates).

¹ For the purpose of the analysis, these categories have been slightly revised since the “Europe’s Buildings Under the Microscope: A country-by-country review of the energy performance of buildings” report.

In order to proceed with discussing the existing financial instruments, it is important to define them.²

Subsidies allow prices to be kept low. They may be provided, for example, to manufacturers of energy efficient equipment such as compact fluorescent light bulbs.

Grants are targeted at households, industrial or other energy consumers to pay for part or all of the cost of introducing energy efficient processes – such as enhanced building insulation.

Grants or subsidies may be financed directly through the state or local authority budget or hypothecated taxes (also known as ring-fenced or ear-marked tax).

Loan schemes to encourage energy efficient practices can be introduced with subsidised interest rates or credit risk support. Subsidies provided by the local authority or state budget to banks offering low interest rates are a fiscal policy.

Value Added Tax (VAT) normally affects the final consumer but not the producer – who passes the cost onto the consumer. [. . .] differential VAT rates can be used to influence the choice of energy efficient technology by householders.

Levies on consumption or production may be used to create a fund (e.g. a levy on electricity sales to fund renewable energy schemes).

Less common, and thus considered innovative, include Energy Supply Obligations (also commonly known as White Certificates) or Energy Performance Contracting. They are considered innovative although Energy Performance Contracting has been around since the 1980s and Energy Supply Obligations since the 1990s. There is another important distinction to make which is relevant for policy-makers. It refers to innovative instruments entirely relying on private financing (and not government budgets).

The following boxes provide some definitions from recent studies.

Third Party Financing (TPF), Energy Performance Contracting (EPC) and Contract Energy Management (CEM) are all terms used to cover a wide variety of contracting and financing techniques for energy efficiency and renewable energy projects.

Source: Energy Charter Secretariat, Third Party Financing: Achieving its Potential, ECS, Brussels, 2003

At its simplest, an Energy Efficiency Obligation is a requirement on a group of market actors in one or more sectors of the energy industry in a given territory to achieve a specified energy saving target.

Source: Dan Staniaszek and Eoin Lees, Determining Energy Savings for Energy Efficiency Obligation Schemes, eceee, 2012

The next section will give an overview of how financial instruments are currently deployed throughout Europe and will provide greater detail on the use of conventional instruments.

² This comes from Energy Charter Secretariat, Fiscal Policies for Improving Energy Efficiency: Taxation, Grants and Subsidies, ECS, Brussels, 2001, pp. 11-13.

METHODOLOGY

The data collection and analysis for this report began with a review of the database of financial instruments from the 2011 BPIE survey. Only programmes in operation in 2011 were considered. In order to make it as complete and up to date as possible, this database was supplemented with information from other sources – the International Energy Agency, the MURE database³ and from some of the National Energy Efficiency Action Plans (NEEAPs) required under the End-use Efficiency and Energy Services Directive⁴. The instruments were divided by type as shown in the previous sub-section. The BPIE database also includes information from some Member States on their use of EU Structural Funds to promote energy efficiency. The database also includes some of the programmes or initiatives related to Energy Performance Contracting and Energy Efficiency Obligations that are positioned as innovative instruments in this report.

The analysis mainly focuses on the conventional instruments which will be compared in terms of⁵:

- Which instruments are used by individual Member States:
 - Financial incentives: Grants/Subsidies⁶, Funds, Preferential loans
 - Fiscal measures: Tax Reduction, Tax Credit, Reduced VAT
- Which measures are supported by the individual instruments:
 - Envelope (including insulation, windows & glazing, exterior wall, doors, ceiling, etc.)
 - Equipment (including efficient heating, efficient lighting systems, ventilation, cooling, control systems, etc.)
 - Other (including energy audits, consultancy costs, labour costs, education and training activities, etc.)
- The level of investment that is supported by the instruments (e.g. 30% of total investment costs)
- The buildings where the measures are being taken (e.g. residential, non-residential, public housing, etc.)
- Level of ambition (e.g. 10% savings, 30% savings, low energy consumption buildings, Class A buildings, etc.)
- How long the instruments are in place (e.g. no deadline, specific for a certain number of years).

There is less information about innovative instruments. Their use is described differently because of the lack of detailed information available

Section 2 also describes what the two main International Financial Institutions (IFIs) in Europe, the European Investment Bank (EIB) and the European Bank for Reconstruction and Development (EBRD), have been doing to finance retrofits.

Section 3 provides some evidence on how effectively these instruments have been used.

³ <http://www.muredatabase.org/>

⁴ http://ec.europa.eu/energy/efficiency/end-use_en.htm. Furthermore, while the main instruments are included, it is possible that there have been some omission of smaller programmes.

⁵ Whenever figures were reported in the national currency other than in euros, the conversion was made using the XE exchange conversion tool. See <http://www.xe.com/ucc/> (as of July 12, 2012).

⁶ Grants and subsidies combined because many Member States make no distinction between them.

2. FINANCIAL INSTRUMENTS – THE STATE OF PLAY IN EUROPE

OVERVIEW OF FINANCIAL INSTRUMENTS IN PLACE IN 2011

After the review of the 333 separate schemes mentioned in the country-by-country study BPIE has identified 132 discrete programmes on-going during 2011 in the European Union; 100⁷ running as conventional programmes, 18 as innovative programmes, ⁸ supported through the EU Structural Funds, and 6 carried out by international institutions such as EBRD, United Nations Development Programme, etc. ⁹

Considering the broad category of conventional programmes, 26 Member States out of 27 had on-going incentives in 2011 for a total of 100 running programmes using different type of instruments. The following figure depicts the number of identified programmes by type of instrument and country.

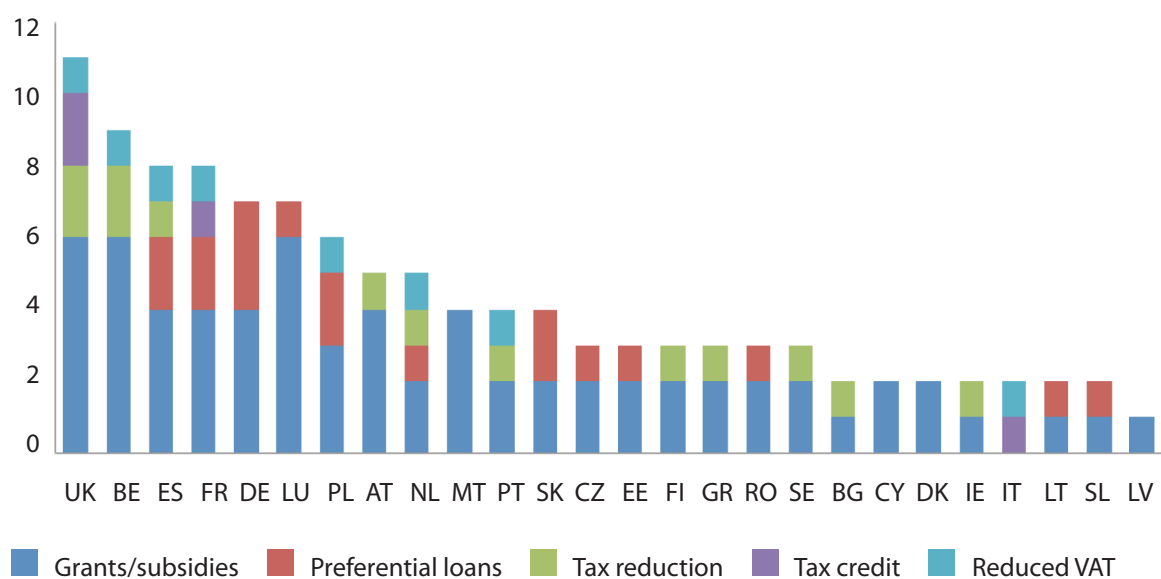


Figure 2 – Number of financial instruments in place in 2011 by country

⁷ 10 programmes using Structural funds were included in conventional programmes.

⁸ Structural Funds reported by Member States, excluded the 10 programmes in the conventional category.

⁹ There can be some double counting, but, as much as possible, programmes funded under, for example, the Structural Funds, were categorised as conventional programmes of the Member States or programmes led by Structural Fund support.

In total there are: 68 grants and subsidies schemes, 18 preferential loans and 25 tax-related instruments (13 tax reduction, 4 tax credit, 8 reduced VAT). Ten programmes (CZ, 2 DE, ES, 1 LT, 2 PT, 2 SK, SL, UK) were implemented together with more than one type of instrument in place. Most commonly, grants and subsidies were combined with preferential loans, and tax reduction with the tax credit measure.

Grants and subsidies are apparently the most widespread type of schemes, followed by preferential loans and tax reduction. Reduced VAT is of growing importance while only a few Member States use a tax credit.

Figure 2 shows that most of the countries with fewer conventional instruments in place are the new Member States.

Belgium and the UK have the greatest number of identified instruments, mainly because the majority of the programmes are developed and implemented at regional level. Italy only had on-going nationwide fiscal programmes during 2011. The Italian regions developed a series of programmes with the support of EU Structural Funds.

Among the countries that reported no conventional programmes at national level is Hungary. However, Hungary has in place different programmes covering the improvement of the energy performance of the buildings funded through 'innovative schemes', EU Structural Funds or by external funding sources. For instance, the budget for the implementation of the Green Investment Scheme is provided by the sales of AAUs from the Kyoto Protocol.

In **Lithuania**, the government is conducting a programme for the energy efficient modernisation of multi-apartment buildings with investments from the JESSICA Holding Fund of €227 million (€127 m from the European Regional Development Fund (ERDF) and €100 m from national funding); and in **Latvia** up to 50% funding is available for thermal insulation of social housing and multi-apartment buildings through EU Structural Funds.

While many Member States provided budgets for their programmes, because of the disaggregated information available, it is beyond the scope of this paper to provide more than anecdotal information on budgets.

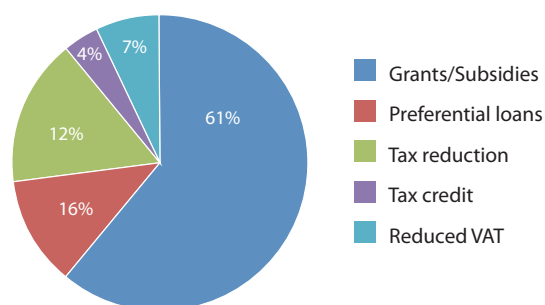


Figure 3 – Share of different type of instruments in terms of numbers of programmes

FINANCIAL INCENTIVES

Financial incentives for the energy efficiency in buildings are divided in two major categories that include Grants/Subsidies and Preferential Loans.

During 2011, 25 Member States had on-going financial incentives specifically designed for works and investments for increasing energy efficiency in buildings. We counted a total of 73 measures. The following figure shows the aggregated number of on-going financial incentives used in 2011 by the different Member States.

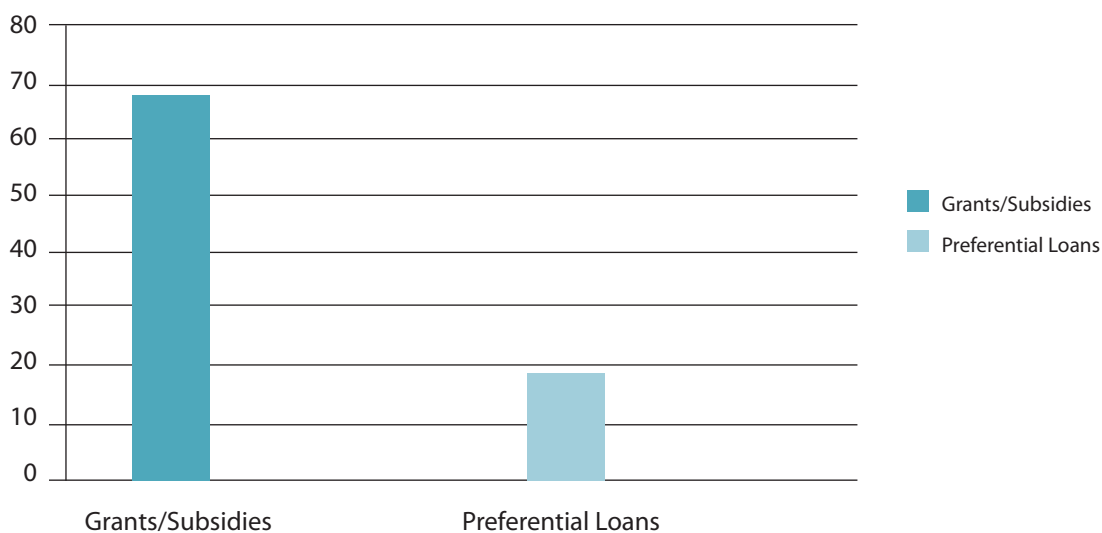


Figure 4 – Number of financial incentives by type

As we can see from the figure, the primary types of financial incentives used are grants and subsidies which total 68, whereas there are only 18 preferential loans schemes.

TYPE OF BUILDING COVERED

Figure 5 shows the EU aggregate share according to the type of building the incentives cover.

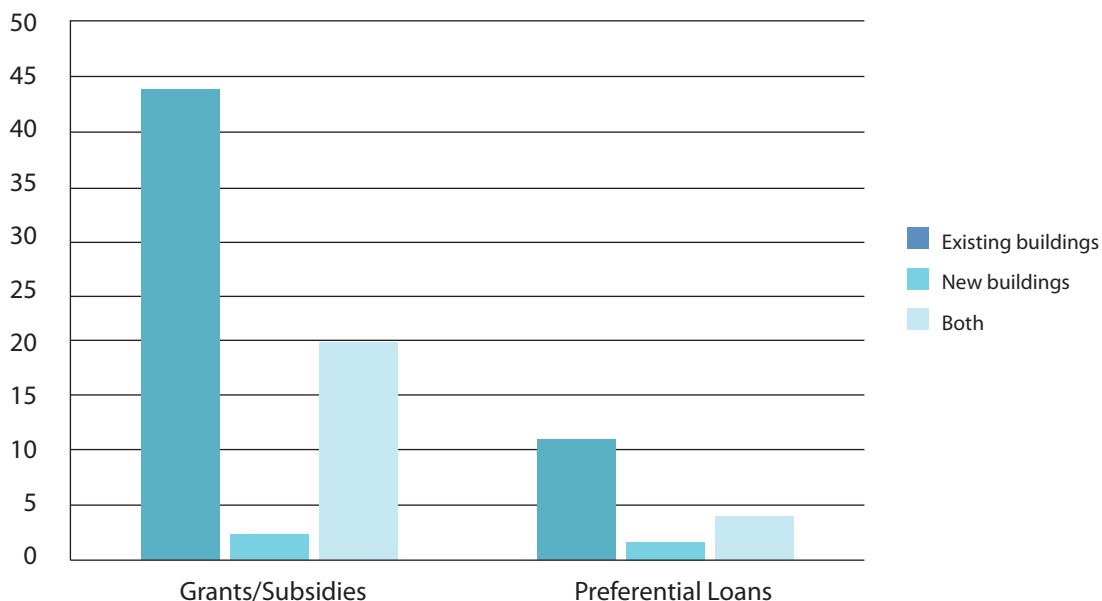


Figure 5 – Number of financial incentives by type of building

Most of the financial programmes, grants/subsidies and preferential loans are directed at existing buildings and few to exclusively new buildings. Many programmes cover both existing and new buildings. The next figure shows the EU aggregate share according to the type of building the incentives cover.

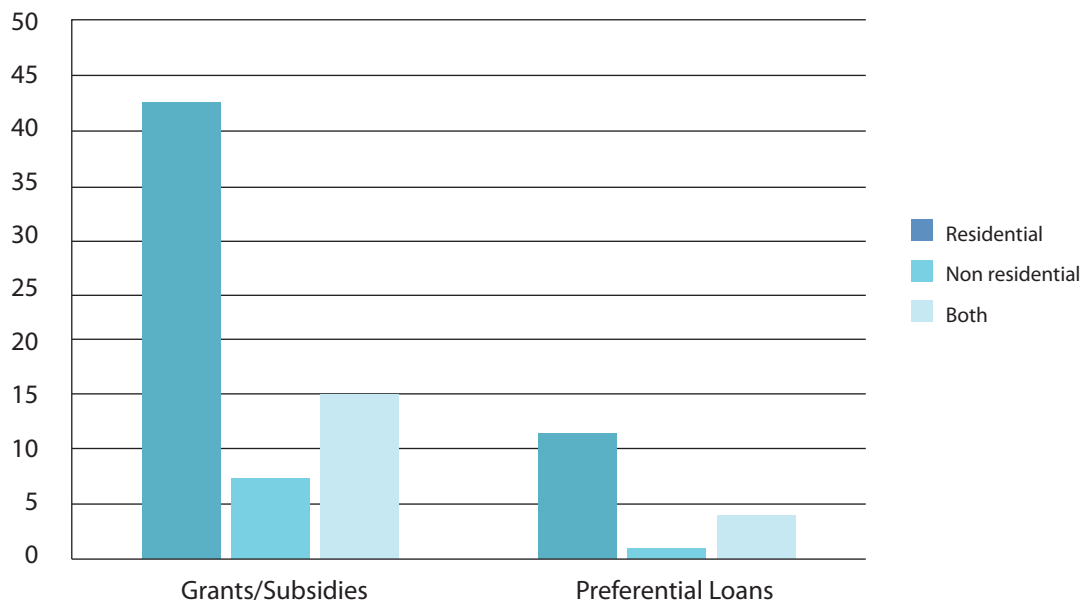


Figure 6 – Number of financial incentives by type of building

Residential buildings are the target for most financial incentives while the non-residential sector has received much less support. This could be explained by the fact that non-residential buildings account for 25% of the floor space whereas the residential stock represents 75% of the floor space¹⁰. In addition, it is generally agreed that individual homeowners need more financial support to undertake the necessary measures because they have less access to financing than commercial enterprises or public entities.

SUPPORTED MEASURES

This section illustrates what the financial measures are supporting (envelope, equipment, other). Figure 7 shows the share of financial incentives by type of measures covered.

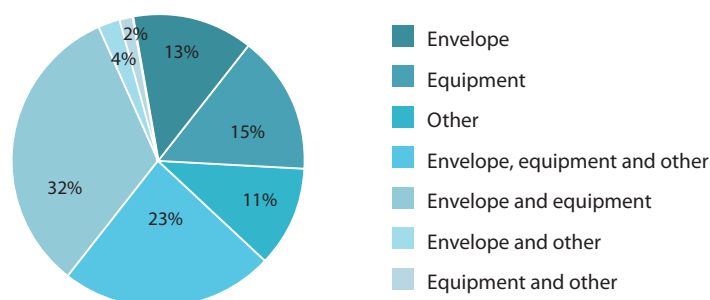


Figure 7 – Share of financial incentives by type of measures covered

Figure 7 illustrates that a good part of the financial incentives support all three categories in a holistic approach (32%). Envelope and equipment together receive good support (23%). Single categories are well supported too (envelope 13%, equipment 15% and other 11%).¹¹

¹⁰ BPIE, Under the Microscope, p. 30.

¹¹ The "other" category includes: audits, education and training.

Figure 8 shows the number of financial incentives by type of measures covered.

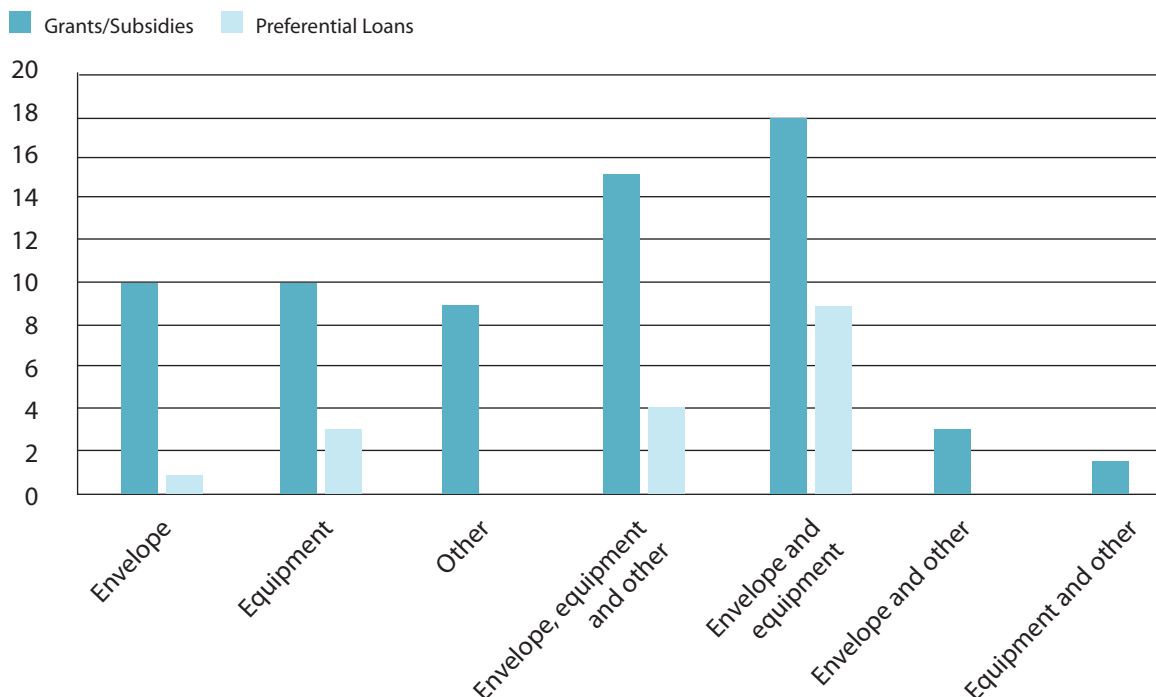


Figure 8 – Number of financial incentives by type of measures covered

The above graph illustrates that grants, subsidies and preferential loans mainly target envelope and equipment. However, the “other” category which includes non-technological measures such as energy audit, education and training activities, also receives strong support in terms of the number of instruments.

LEVEL OF SUPPORT IN THE INVESTMENT

It is important to know what level of support that financial instruments are giving for specific investments, as it can be used as a significant tool for motivating consumers to take up actions.

The following tables provide information on the level of support available from the different financial instruments. The information is divided in terms of the percentage of the entire investment, the support per square metre and the total support available for an individual measure.

The tables provide information only on countries that supplied such data (status 2011). This is not available for all programmes but gives nevertheless a good appreciation of the level of support available throughout the European Union. It could be that in some countries austerity measures have changed the picture in the meantime.

Table 1 – Level of support in % for grants

	Level of support (%)
BE (Brussels Capital)	50% (envelope, energy audit) 30% to 50% (equipment)
BE (Walloon Region)	50% (biomass heating system) Up to 60% (energy audit) Up to 75% (equipment)
BE (Flemish Region)	Max 75% (equipment) 30% (envelope, equipment)
BG	20% (envelope, other)
CY	30% of eligible costs (envelope) 45/55% of eligible costs (equipment)
CZ	Up to 85% of a project's total eligible expenditures (envelope, equipment)
DK	25% (or €1 343.52 (DKK 10 000 DKK)/y per residence) (equipment) 20% (up to €1 343.52 (DKK 10 000) (envelope)
EE	10% (no more than €4 000 for the reconstruction project) (envelope)
FI	15/25% (equipment, energy audit) 40/50% (energy audit)
FR	20/35% (envelope, equipment) 50% (energy audit)
LV	Up to 50% (envelope)
LT	50% (preparation technical project and construction supervision) 15% (envelope, equipment) 100% (of renovation costs for low income families and single persons)
MT	20% (up to €233) (envelope, equipment)
PL	45% of the loan (equipment)
RO	67% (envelope)
SK	Up to the 50 % of eligible costs (or max 500 SKK/m2 of flat floor area) (envelope)
SL	25% of eligible costs (envelope, equipment)
SE	25% (equipment)
UK (Scotland)	100 % (envelope, other)
UK (Wales)	100% (other)

The following table provides the level of support per square metre for those Member States that could provide such information.

Table 2 – Level of support in €/m2 for grants

	Level of support (€/m2)
BE (Brussels Capital)	€100/m2 (envelope, equipment, other)
CZ	€213,13/m2 (CZK 5 500/m2) (envelope, equipment)
FR	€40/80/m2 (new) (envelope, equipment) €50/100/m2 (retrofits) (envelope, equipment)
LU	€8/30/m2 (envelope) €20/160/m2 (envelope, equipment, other) €21-45/m2 (low-energy consumption homes) (new) €57-160/m2 (passive houses) (new) €8/30/m2 (envelope) €50/hour (energy consultation)
SL	€125/m2 (low energy or passive house (new)) €250/m2 for retrofit with passive technology (envelope, equipment, other)

The following table provides the amount of support available for individual measures.

Table 3 – Level of support in amount for grants

	Level of support (Amount)
BE (Flemish Region)	Up to €400K/a (in businesses) (equipment)
DE	€300/€360 (other)
EE	Up to €700 (energy audit)
ES	€3 500 /housing (Class A) (envelope, equipment) €2 800 (Class B) (envelope, equipment) €2 000 (Class C) (envelope, equipment)
IE	€200/3600 (envelope) €400/800 (equipment)
NL	€500 000/project (for additional costs)
RO	Up to €1 343/1 790 (6 000/8 000 RON) (equipment)
UK (England)	Up to €4 338 (£3 500) (envelope) €7 436 (£6 000) (equipment)

Table 4 – Level of support in value for preferential loans

	Level of support (Value)
DE	2,55/3% (envelope, equipment) Up to €50.000 with fixed interest rate (new) Up to €100.000 with a fixed interest rate for 5/10 y (2/3,35%) (envelope, equipment)
EE	Fixed interest for 10 years (not more than 4.4%) (envelope, equipment)
ES	Up to 90% of costs is financed with fixed rate of 1,5% (envelope, equipment)

FR	Up to €30.000 (per 10 or 15 years) (envelope, equipment, other) Tax-free interest of 2.5% a year (complementary to the 2005 tax credit scheme) (equipment)
LU	Reduction of 0.125% on the interest rate granted for the full duration of the loan (new)
LT	Long-term loans with fixed interest rate of 3% (envelope, equipment, other)
NL	Green loans with lower interest (300/600 €/m ²) (envelope, equipment)
PL	25% of the loan is subsidized by the State (envelope, equipment, other)
RO	90% is financed through bank loans (envelope, equipment)

LEVEL OF AMBITION

Policy-makers are increasingly trying to encourage “deep” renovation although there is currently no commonly agreed definition of the term. Deep renovation is defined differently from country to country. Often they refer to percentage reductions in energy use, but they can also refer to reaching an “A” category under the Energy Performance Certificate schemes or achieving a certain level of energy consumption per square metre per year.

The following table provides information on the level of ambition of such schemes. The level of ambition varies significantly. There are several programmes that have a high level of ambition demonstrating that it is possible to achieve them. In some countries, there can be different programmes targeting different levels of ambition. Such is the case in Germany with the range of KfW offerings. The following table highlights the most ambitious schemes.

Table 5 – Level of ambition for financial incentives

	Level of ambition
AT	<ul style="list-style-type: none"> High quality standards thermal renovation, including the whole building shell (exterior walls, windows and doors, ceilings and roof); Maximum energy performance codes for newly constructed buildings that go well beyond standards that are foreseen in general construction codes;
BE (Brussels Capital)	Low energy buildings (<30kW/m ² a) (new/retrofit)
BG	25-35 kWh/m ² area / year (retrofit)
CZ	Class B (retrofit)
DE	Passive house (new)
EE	Improve energy efficiency by at least 20%. Must take an energy audit (retrofit)
ES	Class A/B/C (new/retrofit) Class A/B (new) Min annual reduction of 25% of electricity consumption for lighting interior (retrofit)
FR	Low consumption buildings (BBC) (new/retrofit)
GR	Overall reduction by 30% of existing municipal buildings or 11.14 GWh (958 toe) per year (retrofit)
LU	Low energy buildings and passive housing (new/retrofit)
NL	Class B (retrofit) The new building is 30% better than the required energy performance (new)
RO	Decrease energy consumption to 100kWh/m ² (retrofit)
SL	Very low energy consumption buildings (new)

FISCAL MEASURES

Fiscal incentives for the energy efficiency in buildings include several measures to lower the taxes paid by consumers investing in the energy efficiency of buildings. Measures include tax reductions (individual, corporate and on properties), tax credit and reduced VAT. During 2011, 14 Member States out of 27 had on-going fiscal incentives in place linked to investments for increasing energy efficiency in buildings. These 14 Member States reported a total of 25 measures). The following figure shows the total number of fiscal incentives by type.

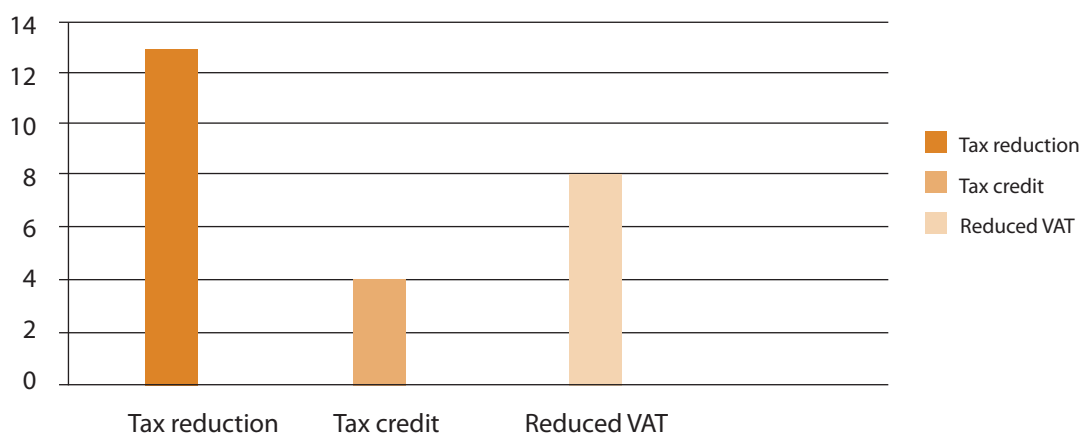


Figure 9 – Number of fiscal incentives by type

The figure illustrates that most fiscal incentives used are in the form of tax reductions (13), followed by reduced VAT (8) and tax credits (4).

TYPE OF BUILDING COVERED

Figure 10 shows the EU aggregate share according to the type of building the incentives cover. Figure 10 illustrates that most fiscal incentives are focussing on existing buildings, especially tax reduction and reduced VAT.

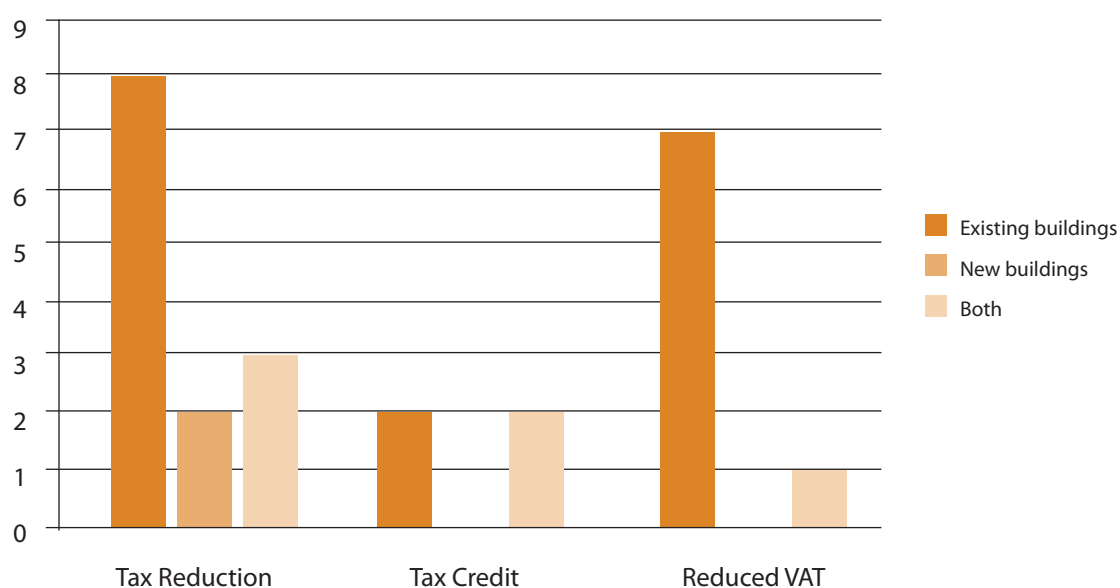


Figure 10 – Number of fiscal incentives by type of building

Figure 11 shows the breakdown by residential and non-residential buildings. The residential sector accounts for most of the incentives.

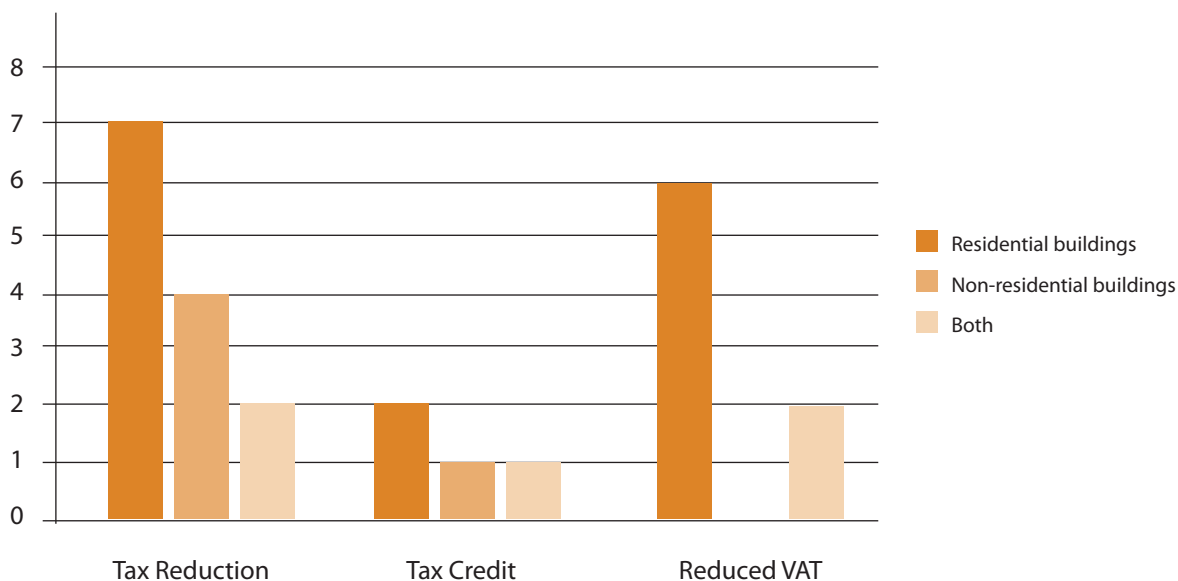


Figure 11 – Number of fiscal incentives by type of building (residential/non-residential)

SUPPORTED MEASURES

This section illustrates which building element the fiscal measures are supporting (envelope, equipment, other). Figure 12 shows the share of fiscal incentives by type of measures covered.

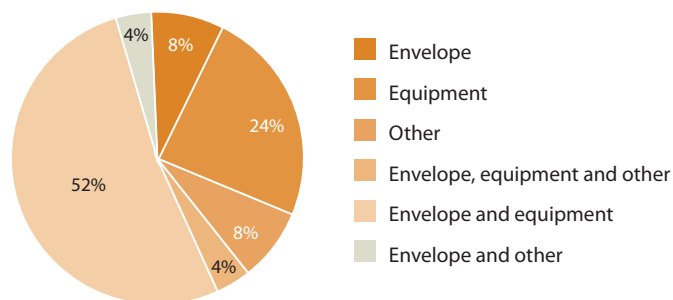


Figure 12 – Share of fiscal incentives by type of measures covered

Figure 12 highlights that both envelope and equipment are mainly supported by fiscal incentives, representing more than half (52%) of the total support share. Equipment itself also receives significant attention (24%). Envelope and other measures are less supported (8%).

Figure 13 shows the number of fiscal incentives by type of measure covered.

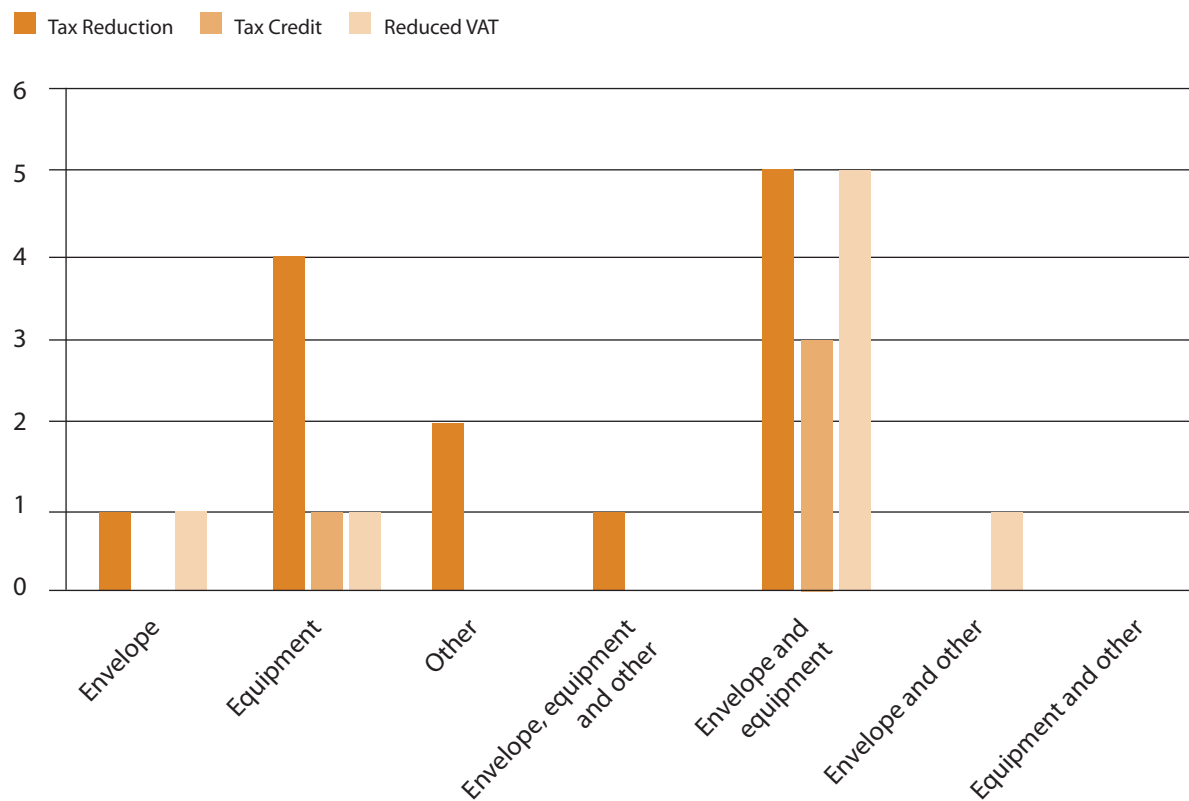


Figure 13 – Number of fiscal incentives by type of measure covered

The figure above shows that most fiscal measures cover a combination of investments in both envelope and equipment. Tax reductions are also heavily used just for equipment.

LEVEL OF SUPPORT IN THE INVESTMENT

The following tables provide information about the level of support in the context of different fiscal measures (again, only for those Member States reporting). Given the scope of this report, it was not possible to put them on an equal basis to make direct comparisons.

Table 6 – Level of support for tax reduction

	Level of support	on individual/ households income	on property tax	on taxable profit
AT	25% (envelope, equipment)	x		
BE (Federal)	40% (envelope, equipment, other)	x		
BE	20% (new) E-level of E60 40% (new) E-level of E40 or less		x	
BG	100% (for 7/10 year Class A) 3/5 y Class B) (building commissioned after January 1st 2005)		x	
ES	Up to 10% (envelope, equipment)	x		
FI	60% of labour costs (envelope, equipment)	x		
GR	Up to €700 (equipment)	x		
IE	Write off 100% of the purchase value in the year of purchase (equipment)			x
NL	41.5% (of annual investment costs) (equipment)			x
PT	25/50% property tax (Class A/A+) (equipment) 10% increase in the deduction related to house loans in the individual tax (Class A/A+) 30% (investment in RES)	x	x	
SE	€5 000 /y/building (labour costs)	x		
UK	n/a (equipment) n/a (envelope)		x	x

Table 7 – Level of support for tax credit

	Level of support
FR	40% on the interest of the home for 7 years (complements the zero interest rate loan) (envelope, equipment)
IT	36/55% (envelope, equipment)
UK	100% tax relief on the cost (equipment) €1 860 /y (£1 500/y) (envelope, equipment)

Table 8 – Level of support for reduced VAT rate

	Level of ambition
BE	6% (envelope, equipment) instead of normal rate of 21%
ES	8% (envelope, equipment) instead of normal rate of 18%
FR	5,5% (7% from 1 ^o of January) (envelope, equipment) instead of normal rate of 19,60%
IT	10% (envelope, equipment) instead of normal rate of 21%
NL	6% (envelope) instead of normal rate of 19%
PL	8% (envelope, other) instead of normal rate of 23%
PT	13% (equipment) instead of normal rate of 23%
UK	5% (envelope, equipment) instead of normal rate of 20%

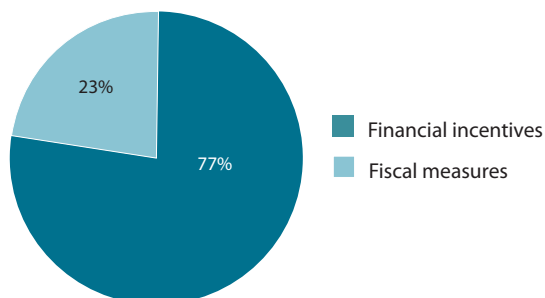
LEVEL OF AMBITION

Table 9 – Level of ambition for fiscal measures

	Level of ambition
BE	The discount is 20% of the annual property tax for residential buildings with an E-level of E60 or less and 40% for residential buildings with an E-level of E40 or less. (new)
BG	Class A or B (building commissioned after January 1st 2005)
FR	Low consumption buildings (BBC < 50kWh EP/m2/y) (new/retrofit)
PT	Class A/A+ (new/retrofit)

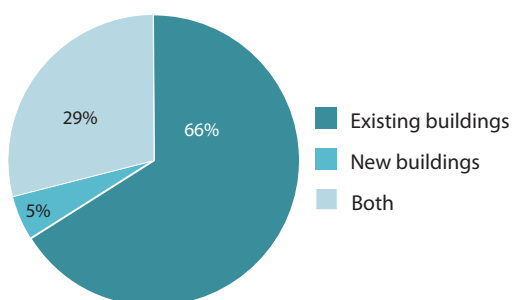
CONVENTIONAL INSTRUMENTS – SUMMARY

Total share by number of programmes in operation

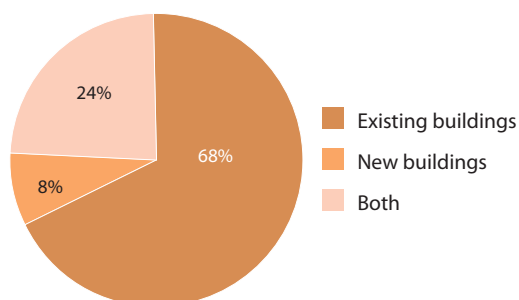


New buildings / existing buildings

Financial incentives

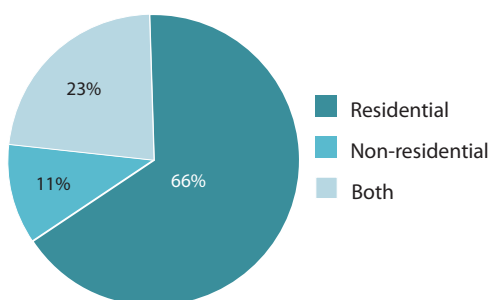


Fiscal measures

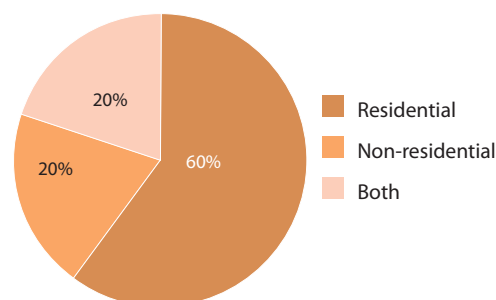


Residential / non-residential

Financial incentives

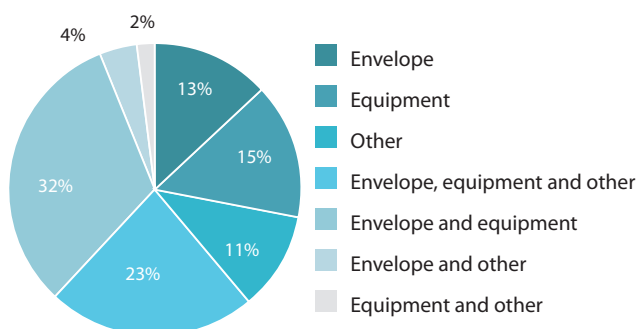


Fiscal measures

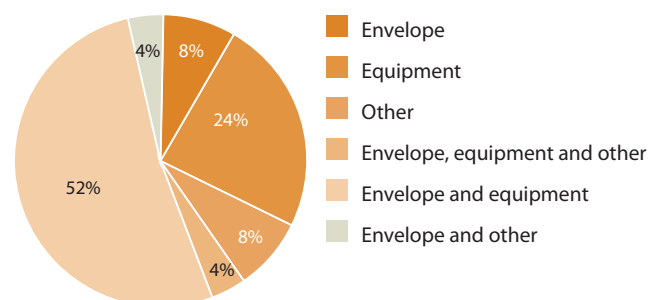


Measures covered

Financial incentives



Fiscal measures



INNOVATIVE INSTRUMENTS

The two main types of innovative financial instruments include Energy Performance Contracting (EPC) and Energy Efficiency Obligations. Both were favoured because they are independent from government budget. If used properly, they can provide long-term financial support that often cannot be guaranteed due to the changing budget priorities of national governments. Energy Performance Contracting has been deployed in Europe since the 1980s while Energy Efficiency Obligations started in the early 1990s in a few Member States.

Energy Performance Contracting/Third Party Financing

Energy Performance Contracting (EPC) has been widely promoted by the European Commission, the European Investment Bank, the European Bank for Reconstruction and Development (see below) and organisations such as the International Energy Agency. Energy Performance Contracting encourages private funding for energy efficiency investments and assigns only a limited role to governments.

In the BPIE survey several Member States indicate EPC activities but the data available is limited. The reason for this is that many government agencies monitor these initiatives only to a limited degree as they are solely placed within the private sector.

Article 3 of the 2006 Energy End-use Efficiency and Energy Services Directive (Directive 2006/32/EC) defines Energy Performance Contracting as “a contractual arrangement between the beneficiary and the provider (normally an ESCO) of an energy efficiency improvement measure, where investments in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement”.

The recently approved Energy Efficiency Directive encourages public bodies to promote the use of Energy Performance Contracting. The first major promotion was as far back as 1993 in Council Directive 93/76, but there is a view that EPC can play an even greater role.

While many Member States acknowledge the fact that there is significant activity by ESCOs within their borders, there is not much hard data. Econoler will soon publish World ESCO Outlook that will include information on 20 Member States plus Norway and Switzerland.¹²

In **Bulgaria**, the Bulgarian Energy Efficiency Fund (BEEF) has provided portfolio credit guarantees to 29 ESCO projects for a total investment level of €17.5 million at a BEEF contribution of €0.6 million and three partial credit guarantees for a total investment of €5.9 million at a BEEF contribution of €3.2 million.¹³ The projects include buildings, industry, street lighting and hospitals and, as such, refer mainly to public buildings. (e.g. administrative buildings and schools).

The Commission states that the current EPC market in Europe is about €6 billion annually. This compares to a market of €30 billion in the United States.¹⁴

¹² See <http://www.econolerint.com/news-details.aspx?i=193>

¹³ See http://www.bgeef.com/display.aspx?page=case_stud

¹⁴ Presentation by Ms. Marie Donnelly, Director, DG Energy, to EUSEW, June 20, 2012. <http://www.environmental-finance.com/news/view/2582>

Energy Efficiency Obligations/White Certificates

Energy Efficiency Obligations (often called White Certificates) build on suppliers' obligation to foster energy efficiency improvements. These instruments are considered financial incentives as they leverage increased investment and facilitate the creation of additional cash flows. They have been used in the European Union for many years. The 2006 Energy End-use Efficiency and Energy Services Directive should have been the big breakthrough to get energy companies to play a major role in all Member States, but that did not happen. However, over the past decade there has been important awareness creation and information gathering. Europe has benefitted from the experience of several countries on the continent as well as from those in the United States.

It was the US that has traditionally shown leadership in having energy companies play a significant role in promoting energy efficiency. This has been evolving since the 1970s.

There are five Member States that report having Energy Efficiency Obligations (Belgium -Flanders Region, Denmark, France, Italy and the United Kingdom). Some have had these obligations since the 1990s. All five countries provided information to the BPIE 2011 survey on the use of White Certificates. For the most part, the information has already been updated by other sources. This was important because Energy Efficiency Obligations were included in the now approved Energy Efficiency Directive.

The most recent source of information on Energy Efficiency Obligations comes from an eceee report produced by Eoin Lees for DG Energy in March 2012.¹⁵

The next table shows the targets together with the annual expenditure by the energy companies for the countries with EEOs in the EU.

Table 10 – Comparison of the Target and the Size of the Energy Efficiency Obligation in the EU as of 2008

Country	Nature of saving target	Current size of target	Estimated annual spend by companies, €M (€/person)
BE - Flanders	1st year primary energy	0.6 TWh annual	26 (4)
FR	Lifetime delivered energy	54 TWh over 3 years	180 (3)
IT	Cumulative 5 year primary energy	2.2 Mtoe in 2008	190 (3)
GB	Lifetime CO ₂	154 MtCO ₂ in 3 years to 2011	900 (15)
DK	1st year delivered energy	0.82 TWh annual	25 (5)

Source: Eoin Lees, Energy efficiency obligations – the EU experience, eceee, March 2, 2012, p. 9.

Importantly, as Lees points out in the eceee report, the expansion of this scheme in Europe has required the energy companies concerned to spend around €2 billion per year. Even though this has ramped up over the years, it represents new funding programmes in only five Member States. This is significant funding and will increase even more now since such obligations are included in the recently approved Energy Efficiency Directive.

¹⁵ Eoin Lees, Energy efficiency obligations – the EU experience, eceee, March 2, 2012, www.eceee.org

While the Energy Efficiency Obligations can be used in all sectors, the residential sector has received most of the attention. Within the residential sector, the following figure shows what measures were supported by the energy companies in the four countries in order to meet their targets.

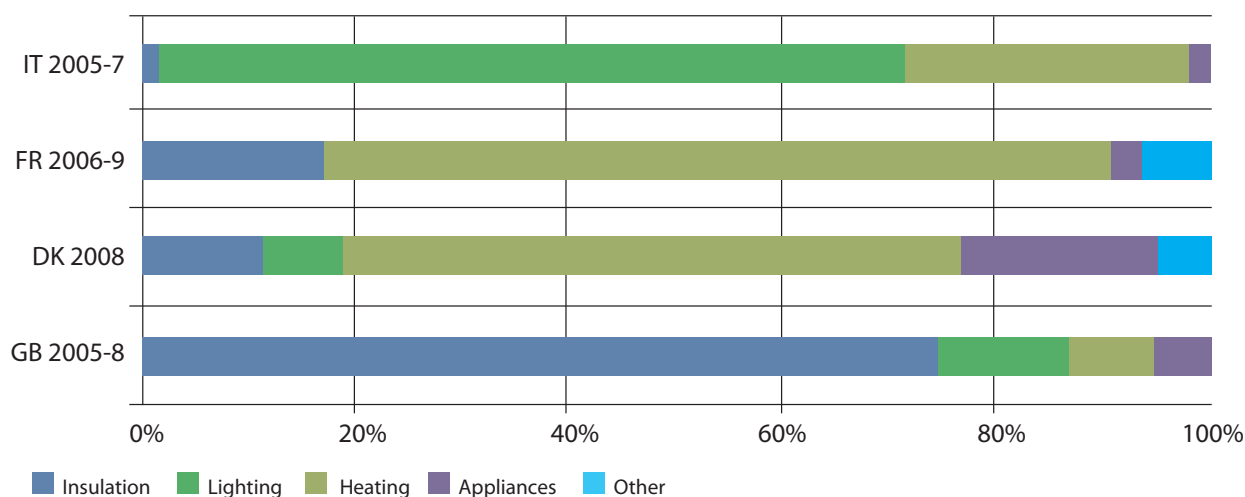


Figure 14 – Residential Energy Savings from EEO Schemes by End-Use

The BPIE survey shows that other Member States had energy companies playing a role to promote energy efficiency, although, technically, they are not linked to energy efficiency. For example, in Slovakia, the Eko-Fund was funded by the Slovak Gas Industry in 2007 with measures including support for the efficient use of energy and for dissemination and awareness-building activities.

ROLE OF INTERNATIONAL FINANCIAL INSTRUMENTS

The multilateral financial organisations play a key role in financing improvements in energy performance in buildings at a European level. There are three key institutions: the European Investment Bank (EIB), the European Union itself through funds such as ERDF and the European Bank for Reconstruction and Development (EBRD).¹⁶

The following is a brief summary of their activities related to projects improving the energy performance of buildings.

The European Investment Bank (EIB)

The European Investment Bank (EIB) provides the public and private sectors with a wide range of financial instruments for energy efficiency investments within and outside the EU:¹⁷

- Intermediated lending, including framework loans available through financial intermediaries in the banking sector or through public authorities, energy service companies or public-private partnerships. It also provides indirect financing to energy efficiency projects via investment funds that have different geographical coverage and are established with the private sector and a range of international financial institutions.

¹⁶ There are also programmes belonging to the Global Environment Facility, the World Bank and the UN.

¹⁷ For more information, go to http://www.eib.org/projects/publications/the_eib_supporting_energy_efficiency.htm

- Risk-sharing instruments combining loans with grants and providing technical support, partnering with the European Commission or national authorities. For example, the EEEF (European Energy Efficiency Fund) launched jointly with the European Commission and other investors in 2011 to provide finance for sustainable energy projects. The Fund has a capital of €265 million and also includes technical assistance to projects financed by the facility. The first project is the renovation of the Jewish Museum in Berlin which also involved the use of energy performance contracting.
- To support project preparation and operation, the EIB manages and participates in several initiatives and programmes.
 - **ELENA** (European Local Energy Assistance) forms part of the EIB's broader effort to support the EU's climate and energy policy objectives. This initiative, managed by the EIB and funded by the Commission, helps local and regional authorities to prepare large-scale energy efficiency and renewable energy projects.
 - **JESSICA** – Joint European Support for Sustainable Investment in City Areas – is also an innovative initiative that uses existing Structural Fund grant allocations to support urban development including energy efficiency projects. 11 Member States (BG, CZ, DE, EE, EL, SE, IT, LT, PL, PT and UK) have moved part of their ERDF allocation into specific JESSICA projects (both for EE and RES) for a global amount of around €1.6 billion (of which 75% are ERDF resources), resulting in the creation of 16 holding funds (of which 15 are managed by the EIB), while 4 financial instruments are set up without a holding fund.¹⁸

The EIB lent €125m to finance the refurbishment of 365 multi-storey residential buildings in Bucharest. The EIB loan financed up to 75% of the programme's investment cost, covering thermal rehabilitation, including the thermal insulation of walls, windows, roofs and cellars of multi-family residential buildings containing some 20 000 apartments.

European Union

Structural and Cohesion Funds (2007-2013) may be used for energy-efficiency and renewable-energy investments, not only in public and commercial buildings, but also in existing housing.

The new proposal for an EU Cohesion Policy for 2014-2020 places even greater emphasis on supporting investments related to EU energy targets and suggests nearly doubling the amount allocated to sustainable energy in the current period, including for building renovation.

Cohesion Policy Funds have helped to trigger more investments, especially in the building sector, even though they have a wider remit than energy efficiency. Between 2007 and 2013, around €4.6 billion is available for energy efficiency. Since 2009, up to 4% of the national ERDF allocations can be used for energy efficiency improvements and renewable energy investments in existing housing that supports social cohesion.

¹⁸ From presentation by Roman Doubrava, DG ENER to CECODHAS workshop, May 15, 2012. For more information, go to: <http://www.housingeurope.eu/event/2466>.

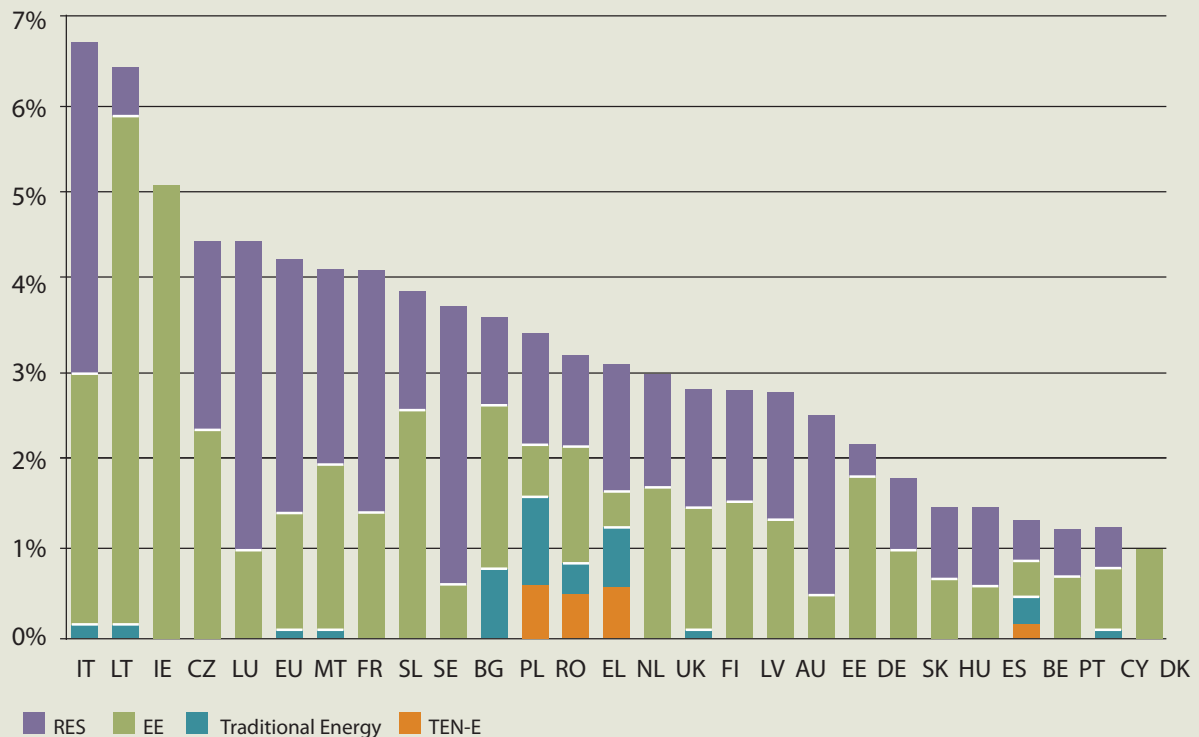


Figure 15 – Structural and Cohesion Funding for 2007-2013 Period

Source: Doubrava presentation at CECODHAS workshop, May 15, 2012

In France the reallocation of 4% ERDF funding to social housing will lead to:

- €320 million ERDF finance triggering investment of up to € 2.2 billion, affecting 110 400 households
- Creation of 31 000 jobs
- 40% average decrease of heating costs of affected households (€30 – 90/month)
- Annual increase of purchasing power of €360 – €1 000 per household

Source: presentation by Roman Doubrava, DG ENER to CECODHAS workshop, May 15, 2012.

From the BPIE survey, 18¹⁹ programmes were identified among 13 Member States. This is undoubtedly understating the use of Structural Funds, because all 27 Member States have access to the Structural Funds for such purposes.

By the end of 2009, Member States allocated less than 1% of the ERDF funding²⁰ for building renovation, while they can use up to 4%.

The proposals for the next phase (2014-2020) foresee about a doubling of funds available for energy efficiency and renewable energy to €17 billion.

¹⁹ 10 programmes were analysed under conventional instruments.

²⁰ Think, Topic 7, How to Renovate All Buildings by 2050, <http://think.eu.eu>, p. 30.

The European Union also provides funding for buildings through the 7th Framework Programme for R&D²¹, as well as through the Intelligent Energy Europe (IEE) programme.²² Under the Horizon 2020 programme²³, the EU Commission proposes that €6.5 billion be allocated to energy research and innovation, including the continuation and reinforcement of current IEE Programme activities including continued and strengthened support through ELENA.

To assist Member States and other stakeholders with better targeting and use of the EU Funding towards energy efficiency, the Commission has been stepping up its capacity building and awareness rising efforts, focusing on national authorities (i.e. the European Public-Private Partnership's information campaign on Structural Funds and PPPs), regional and local authorities (i.e. capacity building activities in the context of the Covenant of Mayors) and other actors (especially through the IEE Programme). Particular attention has been paid to the provision of technical assistance for the development of bankable projects.²⁴

European Bank for Reconstruction and Development (EBRD)

The European Bank for Reconstruction and Development (EBRD) was created to support the development of market economies in the region following the widespread collapse of communist regimes.

The principal forms of direct financing provided by the EBRD are loans, equity and guarantees:

- **Loans** are tailored to meet the particular requirements of a project. The credit risk may be taken entirely by the EBRD or partly syndicated to the market.
- An **equity** investment may be undertaken in a variety of forms. When the EBRD takes an equity stake, it expects an appropriate return on its investment and will only take a minority position.
- **Guarantees** are also provided by the EBRD to help borrowers gain access to financing.

Over the years, it has provided financing that has had an impact on buildings. It was very active in improving the performance of district heating systems and also helped fund Third Party Financing companies in new Member States, starting in the 1990s. Of the new Member States, it has set up dedicated funds in Bulgaria, Romania and Slovak Republic that have helped fund renovation of buildings.

The EBRD has an initiative called the Sustainable Energy Initiative. From 2006 to 2011, the EBRD invested €8.8 billion in 464 sustainable energy projects in 29 countries. The total project value was 46.9 billion, showing a strong leveraging effect. This represented 30% of the EBRD's activities. The EBRD has been transitioning away from the new EU members, apart from Bulgaria and Romania, where they the EBRD remains quite active. The refurbishment of buildings has not been a distinct work area and many of the activities in buildings are integrated into the theme of industrial energy efficiency, which includes commercial buildings. Until recently, the EBRD saw a difficult business case for investing in energy efficiency in buildings due to, in part, the need for bundling and because of the difficulty in developing a bankable project that is interesting to investors.

²¹ http://ec.europa.eu/energy/technology/fp7_en.htm

²² <http://ec.europa.eu/energy/intelligent/>

²³ http://ec.europa.eu/research/horizon2020/index_en.cfm

²⁴ European Commission non-paper on energy efficiency financing in the context of the Energy Efficiency Directive. <http://energycoalition.eu/sites/default/files/20120514%20Non-paper%20financing%20EED.pdf>

3. REVIEW OF IMPACT OF FINANCIAL INSTRUMENTS

The 2011 Microscope study had an entire chapter on barriers and challenges that hinder the uptake of renovation measures. As the report states, “the fact that there is a large untapped cost-effective potential for improving the energy performance of buildings is evidence that consumers and investors, as well as society in general, are not keen on investing in energy efficiency . . . This human dimension combined with a variety of other factors [. . .] need to be understood and addressed if an ambitious retrofit strategy is to be successful. It is a complex set of issues that impact all actors in the buildings chain.”²⁵

The BPIE study classified the barriers according to the following figure. While four of the categories specifically pertain to financial barriers, many of the other categories such as institutional, information separation of expenditure and benefit barriers also have a direct relationship with the need for financial instruments.

This report simply raises these issues and encourages readers to refer back to the Microscope study for a complete review of the barriers.

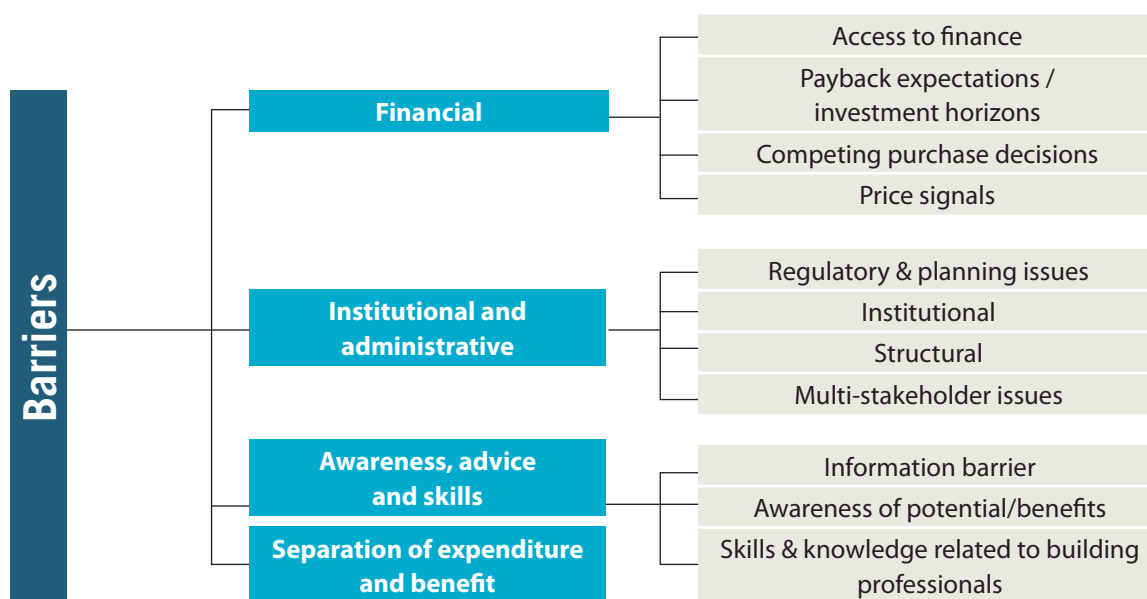


Figure 16 – Classification of barriers as identified by the BPIE survey

²⁵ BPIE, Europe’s Buildings Under the Microscope, p. 55.

This report does not analyse how effective the financial instruments have been and how they continue to address the market barriers. It is sufficient to state that, directly or indirectly, governments have deployed financial instruments to address the barriers.

Briefly, the rest of this section provides, as much as possible:

- Further comments on the use of the financial instruments as described in Section 2, beyond what is already available in that section;
- Evidence and commentary on the impact of the instruments;
- Comments on how effective these instruments are in promoting “deep” renovation by showing their level of ambition;
- The leveraging of private finance.

The BPIE survey included, where possible, information on key indicators and on the impacts of the financial and fiscal programmes. Relevant information on different programmes evaluation is often hard to collect and even harder to compare because there is no standardised way to monitor and evaluate the individual programmes and Member States using different key performance indicators. The following figure shows the number of programmes that reported data from the ex-ante or ex-post assessments by different key performance indicators (KPI's).

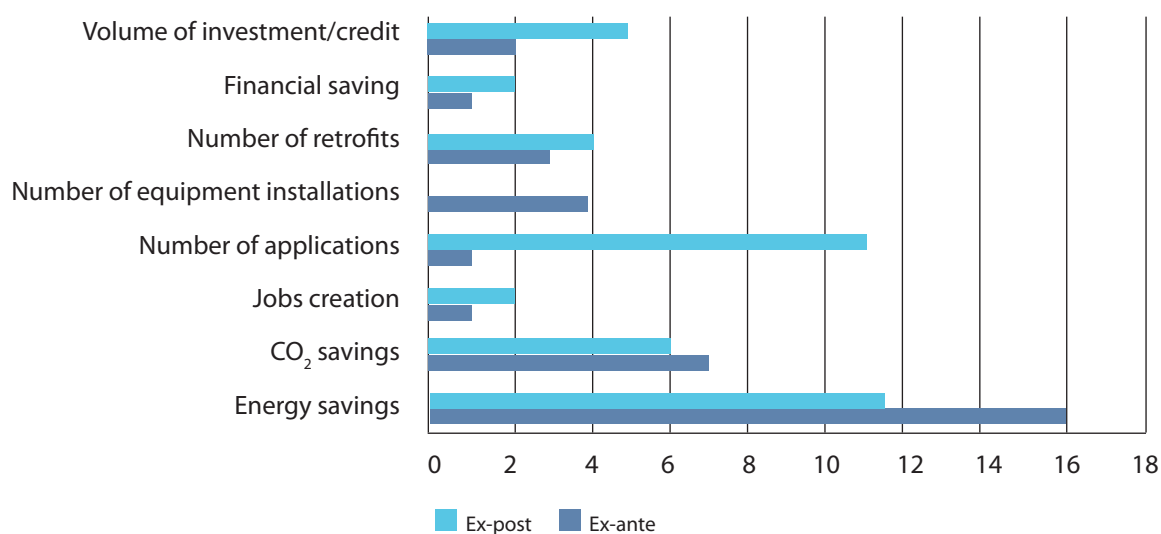


Figure 17 – Number of programmes that reported ex-ante and/or ex-post impacts by different key performance indicators

The figure illustrates the different type of performance indicators Member States use to carry out the evaluation of financial and fiscal programmes which consist of the following: total/annual energy savings (kWh/m²a, GWh, TWh or toe), total/annual CO₂ savings (tonnes CO₂/y), total/annual jobs creation, number of total/annual applications received, number of total/annual equipment installations (boilers, solar collectors, lamps), number of total/annual retrofitted buildings/dwellings/area benefitted, financial savings (energy costs savings), total volume of investment/credit.

In total, 37 out of 100 conventional programmes reported information on their evaluation, frequently using a mix of Key Performance Indicators.²⁶ Ex-post evaluation is normally undertaken once the programme has ended. As the reported programmes are still running, the majority of information collected under the ex-post evaluation can be considered as an intermediate evaluation, normally yearly or for a specific period.

Among the most commonly reported ex-ante indicators were energy (16) and CO₂ savings (7). As for the ex-post indicator, the most used is the number of applications followed by energy and CO₂ savings. The number of applications is often reported for the reason that it is typically easy and rapid to measure, compared to others KPI's. Some programmes also reported the total volume of investments and the number of buildings retrofitted. Few programmes reported financial savings and job creation.

The next figure shows the share of reported ex-ante and ex-post evaluations by type of instruments.

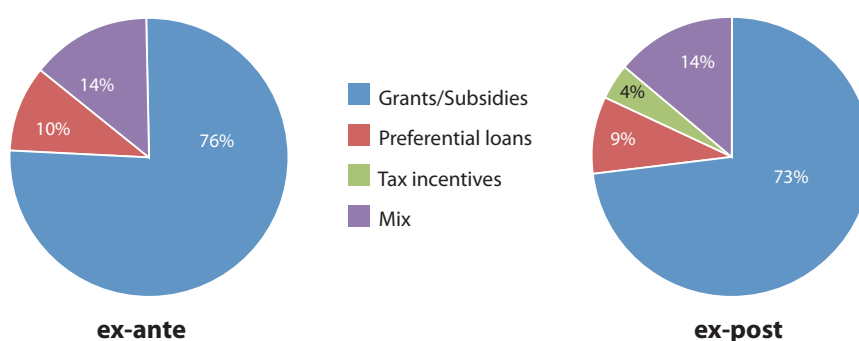


Figure 18 – Share of reported ex-ante and ex-post impacts by type of instrument

Figure 18 indicates that the majority of available information on programme evaluation is for grants and subsidies, both ex-ante and ex-post. Although only a small number of preferential loans reported ex-ante and ex-post impacts, the same didn't happen for the fiscal incentives that have no ex-ante evaluation and a very small percentage on the ex-post. While for grants and loan schemes it is more common to assess ex-ante impacts (since the budget allocation is known before the programme starts to be implemented), the same doesn't happen for the fiscal incentives (since they do not depend on a planned budget but rather on the intensity with which they are used).

Examples for the reported **ex-ante** impacts:



In Bulgaria the **Building Insulation Improvement Measures** from the **National Programme for Housing Renovation 2006-2020** is planning to employ between 2 000 and 8 000 people per year, targeting 3 962 public buildings and 650 981 dwellings on a total of 61 555 107 m² from 2006 until 2020. This will possibly allow reaching an average energy saving of 25 up to 35 kWh/m²/year, with a total saving of 2 076 GWh/year (611 GWh from public buildings and 1 465 GWh from households).



In Cyprus, the **Grant Schemes for Energy Savings** in the residential and tertiary sector predict a total energy savings of 17 819 toe by 2016 and 29 699 toe by 2020.

²⁶ This does not mean that the other programmes did not undertake some form of monitoring or assessment. However, they were not forwarded to BPIE during the survey for a variety of reasons.

Among the schemes reporting **ex-post** impacts:

-  The previous programme phase of the **KfW Energy Efficient Rehabilitation** in Germany reported 567 ktonne of direct CO₂ savings (incl. electricity and district heating) and 5 785 TJ of energy savings (fuel/ electricity) as of 2009.
-  The Polish **Thermo-modernisation fund** provided grants totalling €264 million from 1999-2010. The total value of the renovations came to €1.7 billion, meaning that the fund leveraged €1.2 billion. Although it was not a very successful scheme until 2002 mainly due to complicated application procedures, from 2003 on the number of applications increased significantly thanks to conditions amendment and massive promotion activities. Currently, the volume of the fund does not meet the demand.²⁷
-  The **zero interest loans** (EcoPTZ) launched in July 2009 in France gathered 71 000 beneficiaries at the end of the year and 100 000 after one year, with an expectation of reaching an average 150 000 granted loans each year (status 2011). Windows are addressed in 75% of the works financed by zero interest loans, even though it is one of the less efficient types of works. One reason is that window insulation requirements to benefit from a zero interest loans are lower than the ones to benefit from a tax credit. The most financed works are roof insulation, boilers & heat pumps and walls insulation.
-  The **Low Energy Buildings** programme launched by ADEME and the regional authorities in 2006 in France has resulted in a large sample of building operations. The 1 100 projects are 60% residential and 40% non-residential, mostly new constructions (80%). 85% of the projects for which detailed data is available, show a construction cost lower than 2 200€/m² and 60% are even lower than 1 500 €/m² (compared to 1 200€/m² average cost of new constructions).
-  The French **Programme OPATB** targeting thermal and energy improvement of residential and tertiary buildings granted €1.4 m of subsidies corresponding to €4 m of works carried out and around 2 000 MWh/year saved and more than 400 tons of CO₂ prevented. Up to now 16 communities are involved in €20 m of retrofit works with various support from ANAH, ADEME and local authorities.
-  A first evaluation of the new German **Housing modernisation programme** carried out by Kleemann/Hansen (2004) shows that assuming a total credit volume of €9 billion up to 2010 (or €1.5 billion per year), of which presumably 25 % is used for energy saving Öko-Plus measures, the total cumulative CO₂ reduction in 2010 amounts to about 0.6 million tons or 0.1 million tons per year which is a considerably lower estimate compared to the estimated impact of the former Housing Modernisation Programme 2003 and the KfW CO₂ Reduction Programme. Another ex-ante evaluation of this programme carried out by a group of research institute on behalf of the Umweltbundesamt (2008) shows that for the period 2005 until 2030, a total credit volume of €1 billion is assumed for this programme.
-  The German **Market Incentive Programme for Renewable Energies** evaluation (2009) stated that in 2008 about 153 000 activities have been supported, in particular small-scale renewable heating systems. The total financial promotion comprises about €350 million of which €20 million has been used as interest support (KfW). It has been estimated that the promotion of the heating systems in 2008 (2007) resulted in about 335 000 tonnes CO₂ savings in 2008 (430 000 tonnes CO₂ in 2007). In 2007 an impact evaluation of the programme was carried out by the Zentrum für Sonnenenergie und Wasserstoff-Forschung Baden-Württemberg, covering the period January until December 2006. In total, approximately 137 500 allowances were granted, whereas the solar collectors had the largest share in numbers followed by biomass. The CO₂ emission reduction by this programme is estimated over 840 000 t CO₂ for 2006. Although solar collectors had the largest share in numbers, the use of biomass as energy source contributed about 90% to the CO₂ savings. In the ex-ante evaluation which

²⁷ <http://www.been-online.org/The-Thermal-Modernisation-Fund.420.0.html>

was carried out by Kleemann/Hansen (2005), the impact of the Market Incentive Programme, calculated only for residential buildings, estimates a yearly investment volume of €540 million for solar collectors, resulting energy savings by about 0.24 TWh per year and a yearly CO₂ reduction (only direct emissions) by 40 kt and a yearly investment volume of €100 million for biomass systems with an energy and CO₂ savings in the residential sector amount to 0.72 TWh/a or 130 kt CO₂.



In Cyprus the **Grants scheme for energy savings in the residential sector** (existing dwellings) reached 8 951 applications in 2008 for the thermal insulation of walls, windows and roofs.



By the end of 2010 the **More with Less Programme** in The Netherlands met the initial target of improving the energy quality of 10 000 buildings. Through the whole of The Netherlands, projects are supported by installers, builders, housing corporations, municipalities and others. They do not only aim at improving the energy efficiency of the existing building stock, but also at training the building workforce through educational programmes. Since 1995, the **Green Investing and Financing** programme has involved more than 235 000 investors providing a total of €7 billion invested in green projects.



In Finland, by the end of 2007, almost 40% of the building stock was covered by the **Energy Audit Programme**. Cumulative savings during the whole period between 1992 and 2007 are approximately €360 m and over 11 TWh, (industry accounts for about 70 %) with an estimated annual savings in energy and water costs achieved by audits in the service and industry sectors (excluding process industry) to be some €23 million. The corresponding savings in energy use is approximately 0.75 TWh per year. The average saving potentials reported in energy audits in the service sector are 16.4% in heat and fuels, 6.8 % in electricity and 7.3 % in water consumption. The on-line monitoring system of the EAP is regarded as an important tool that has allowed a proper monitoring of the cost-effectiveness of the programme.

* Whenever figures were reported in the national currency other than in euros, the conversion was made using the XE exchange conversion tool. See <http://www.xe.com/ucc/> (as of 08.08.2012)

4. CONCLUSIONS AND LESSONS LEARNED

This review of the use of financial instruments in Europe leads to the following findings:

- All 27 Member States have on-going programmes to support the energy performance of buildings, either in form of conventional or innovative financing or through the help of external funding. Some Member States have a large range of financial support options, reflecting the needs of their wide range of building types. However, the level of ambition of financial programmes should be increased in order to create more impact and to unlock further private investments in deeper renovation.
- Very few programmes have set ex-ante goals and objectives, and few have an evaluation of their effectiveness. Few programmes have a constant monitoring process throughout their implementation. There is a need for greater use of common key performance indicators to make comparisons easier. The commonly used indicators for evaluation are: annual energy savings (TWh, GWh or toe); heating energy demand (kWh/m²a); CO₂ emission reduction (tonnes CO₂/year); total number of applications or project rehabilitations; number of new jobs created.

CONVENTIONAL INSTRUMENTS

Coverage

- Financial instruments most frequently used rather than fiscal incentives. The form of grants/subsidies appears to be the most frequently chosen.
- Most instruments are for existing buildings and mainly for residential buildings. This is true for financial incentives as well as for fiscal incentives. The residential stock is the biggest segment with an EU floor space of 75% of the building stock²⁸, thus representing a high priority.
- While there are some instruments that target only the envelope or a specific technology, most of them support a mixture of measures, allowing for a more holistic approach. However, financial measures appear to have a more comprehensive approach giving more support to non-technological measures such as energy audits, education and training activities.
- Increasingly, most Member States use a combination of financial and fiscal incentives. Commonly, grants and subsidies are combined with preferential loans and tax reduction with tax credit measures.

Level of support

- The level of support ranges from 10% to 100%, with most financial instruments falling between 20-40%. No real pattern has developed. Energy audits are supported at an average level of 50-60 %.

Level of ambition

- There is an increasing level of ambition towards A, B or C class retrofits, both in old and new Member States. However, very few programmes have set an energy reduction in term of compulsory percentage when applying for an incentive.
- For new buildings, there are some good examples of support for passive houses or low consumption buildings in general but only a few Member States provide such support.

²⁸ BPIE, Europe's Buildings Under the Microscope, page 30

Leverage

- There are many examples of strong leverage. KfW bank shows very strong results but the same can also be said for many other programmes.
- The least leverage is for programmes targeted towards fuel poverty, but that is to be expected because the targeted audience does not have funds to contribute towards the energy efficiency improvements.

Role of Innovative Tools

- Energy Performance Contracting has had a long lead-time with many twists and turns. However, it appears there have been important gains. There are greater efforts to be made to address regulatory and non-regulatory barriers and to ensure EPC can work for both social housing and public buildings. Whether EPC can deliver deep renovation remains to be seen.
- Energy Efficiency Obligations are now enshrined in the approved Energy Efficiency Directive. While there is some flexibility that can reduce the overall impact, the case for using energy companies and the potential impact has been made. Similar to EPCs, there is concern whether EEOs can deliver deep renovation.
- Both EPC and EEOs can mobilise significant amounts of non-government funding for investing in improving the energy performance of buildings.

Role of Structural Funds and IFIs

- Considerable effort is now underway to use Structural Funds in a more meaningful way to invest in improving the energy efficiency in buildings. Many Member States have discrete programmes that bring in Structural Funds as core funding. Funds can be used by any Member State although the degree of use varies significantly. Some Member States are almost entirely dependent on Structural funds for their national programmes, particularly in new Member States.
- Given the proposals for the next phase of the Multi-annual Financial Framework, significantly more funding will be available to be used for building improvements.
- The EIB has been strengthening and broadening its range of financial products for buildings, sometimes in co-ordination with Structural Funds and sometimes on its own.
- The EBRD is working in fewer new Member States but where it is present, it has a positive role to play. It has been a major funder in energy efficiency in the region for two decades. The third phase of its Sustainable Energy Initiative is welcome, even though it is for a reduced number of Member States.

Future Outlook

In the autumn of 2012, the UK will start implementing its Green Deal, an innovative financial mechanism eliminating the need to pay upfront for energy efficiency measures. The cost of the measures should be covered by savings on the electricity bill.

The European Commission is actively trying to provide a larger percentage of Structural Funds to be used for improvements in the energy performance of buildings and to work with Member States who are currently underutilising their potential allocation.

Undoubtedly, more innovative ideas and initiatives will be necessary. Deep renovations are expensive, even if they are cost effective. They require considerable up-front capital that is normally beyond the support of any single financial instrument. Thus, there will be the need for some form of bundling.

New strategies to secure sufficient financing for the deep renovation of the European building stock are needed which ideally bring together private and public investment streams. Policy-makers and the relevant stakeholders in the building sector, e.g. the real estate community, should elaborate which policy framework would enable the necessary investments. This would not only create new investment opportunities for the private sector but would also reduce the burden on public budgets.

ANNEX I

Acronyms

AAUs	Assigned Amount Units under the Kyoto Protocol
BPIE	Buildings Performance Institute Europe
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EIB	European Investment Bank
EPC	Energy Performance Contracting
EU	European Union
GHG	Greenhouse Gases
IEE	Intelligent Energy Europe
IFI	International Financial Institution
KPI	Key Performance Indicator
Mtoe	Million tonnes of oil equivalent
NEEAPs	National Energy Efficiency Action Plans
TPF	Third Party Financing
VAT	Value Added Tax

Conventional financial programmes

AT	Thermal Building Rehabilitation for businesses
AT	Energy Efficient Housing Programmes – Constitutional Treaty Between Austrian Federation and Länder
AT	klima:aktiv Programme
AT	Social housing subsidy scheme for residential buildings
AT	Tax Incentives
BE	Subsidy schemes: <ul style="list-style-type: none"> • Thermal insulation (roof insulation, green roof, insulated windows, wall insulation) up to 50% of investment • Energy equipment (ventilation, gas condensing boiler, thermostatic valves, gas water heater) from 30 to 50% of investment
BE	Subsidy schemes
BE	Geothermal system; Maintenance or replacing condensing boiler, wood boiler, heat pump; roof insulation; first floor insulation ;Installing regulation thermostatic valves; energy audit; wall insulation, solar water heaters< Double glazing window. tax breaks: 40% of investment
BE	Discount on the property tax for new residential buildings with lower E-level (Energy performance level)

BE	Subsidy scheme Roof insulation of existing residential buildings solar water heaters max 75% of the investment
BE	Brussels region: Exemplary Buildings contest
BE	Ecology subsidy
BE	Lower VAT on home refurbishment – Federal
BE	Refurbishment subsidy for existing residential buildings
BG	National Programme for housing renovation in Bulgaria (including the National Strategy for financing the building insulation for energy efficiency)
BG	Building Tax Exemption
CY	Grants scheme to encourage for energy savings and the use of RES (end use)
CY	Scheme for subsidising CFL lamps
CZ	National Environment Fund: Operational Programme Environment (OPZP in Czech)
CZ	Building Retrofit Subsidies: PANEL programme
DE	KfW-Energy-efficient Rehabilitation, Energieeffizient Sanieren (former KfW CO2-Building Rehabilitation Programme)
DE	KfW- Programme: Energieeffizient Bauen (energy efficient construction). It replaces the former programme ökologisch bauen (ecological construction)
DE	Housing Modernisation / “Wohnraum Modernisieren” (n° 141/143)
DE	Market Incentive Programme for Renewable Energies (Marktanreizprogramm für erneuerbare Energien – MAP)
DE	On-site energy advice (Vor-Ort-Beratung) / Energiesparberatung vor Ort (BAFA)
DK	Boiler scrapping scheme
DK	Renovation Fund
EE	Renovation loan for apartment buildings
EE	Support for energy efficient renovation of apartment buildings
EE	Grants for technical inspections and energy audits in residential buildings (under the National Development Plan for Housing Sector 2008-2013)
ES	VAT reduction
ES	TAX deduction
ES	Renove Tourism Plan 2009
ES	The State Housing Plan and Rehabilitation (PEVR) (Axis 4)
ES	Support for Energy Efficiency in Buildings (included in the EE Action Plan)
ES	Grants for Energy Efficiency in Buildings
ES	Action Plan 2008-2012: Studies, feasibility analyses and audits to improve the energy efficiency in installations
FI	Energy Grants for Residential Buildings
FI	Tax deductions for residential refurbishment
FI	Energy audit programme (EAP)
FR	No interest loans for energy retrofits (ECO PTZ)
FR	Incentives from ANAH

FR	The sustainable development account: Livret de Developpement Durable: Preferential loans for energy saving measures
FR	Realisation of low consumption buildings (AAP PREBAT)
FR	Energy efficiency tax credit (including Tax credit for BBC building 2009-2020)
FR	Energy efficiency of residential and tertiary buildings - Program OPATB
FR	Grants for energy audits in buildings
FR	Reduced VAT
GR	Exoikonomo Katoikon (Saving Energy at Home) (Priority axis 4 of O.P. `Competitiveness & Entrepreneurship` of National Strategic Reference Framework)
GR	Exoikonomo (Priority axis 4 of O.P. `Competitiveness & Entrepreneurship` of National Strategic Reference Framework)
GR	Tax deduction
IE	Better Energy: the National Upgrade Programme (replacing Home Energy Saving Scheme, Greener Homes Scheme, Warmer Homes Scheme)
IE	Accelerated Capital Allowances for Energy Efficient Equipment / Energy Efficiency Tax Incentives for Business
IT	Fiscal incentives for energy savings in the household sector (Budget Law 2007, 2008 and 2010)
IT	VAT Reduction (Budget Law 2010)
LU	Increase in promotion of efficient new building (new buildings, as against WD2008)
LU	Expansion of the upgrading programme for old buildings
LU	Old building upgrade programme
LU	Promotion of energy-efficient new homes (new building compared with WD2008: low-energy housing, passive housing)
LU	Energy Efficient Partner
LU	Think Climate - Financial aid programme for energy savings and renewable energy in housing
LU	Renewal of oldest heating systems
LV	Increasing Energy Efficiency in apartment buildings
LT	The Programme of Modernisation of Multi-dwelling Buildings
MT	Energy Efficiency in the tertiary sector
MT	Promotion of compact fluorescent lamps
MT	Promotion of solar water heaters
MT	Subsidy schemes for insulation in buildings
NL	Temporary control block by block (Energibesparing GebouwdeOmgeving (EGO), 'Blok-voor-blok' pilot)
NL	More with Less Programme (Meer met Minder)
NL	Energy Investment Allowance (Energie-investeringsaftrek, EIA)
NL	Green Investing and Financing (Groen beleggen en financieren)
NL	VAT reduction
PL	Promotion of solar collectors in building sector

PL	Infrastructure and Environment Operations Programme
PL	Thermo-modernisation fund
PL	VAT reduction
PT	Energy Efficiency Fund
PT	Investment and Employment Initiative Programme
PT	VAT reduction
PT	Tax deduction
RO	Casa Verde Program
RO	Thermal rehabilitation of housing stock financed by bank loans with Government guarantee (Reabilitarea termică a clădirilor de locuit cu finanțare prin credite bancare cu garanție guvernamentală) complementary to the Multiannual National Programme for increasing the energy performance of the block of flat/houses
RO	Multiannual National Programme for increasing the energy performance of the block of flat/houses (Programul național multianual privind creșterea performanței energetice la blocurile de locuințe)
SK	Subsidies for Housing Development
SK	Environmental Fund
SL	ECO Fund : Soft loans for environmental investments for citizens ; Subsidies for residential buildings ; Subsidies for multi-residential/apartment buildings
SE	Programme for buildings with very low energy use (Program för byggnader med mycket låg energianvändning - LÅGAN)
SE	Support for installation of Solar heat
SE	Tax deduction
UK	Warm Front Scheme (England)
UK	Home Insulation Scheme
UK	Scottish Energy Assistance Package
UK	Nest programme
UK	Warm Homes Scheme
UK	The Universal Home Insulation Scheme (UHIS)
UK	Reduced sales tax for energy saving materials
UK	The Enhanced Capital Allowance Scheme
UK	Stamp Duty Relief for Zero Carbon Homes
UK	Landlords' Energy Saving Allowance



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