Financial Sustainability and Cost Effectiveness of Policies in the Context of Article 7 EED

Article 7 and MRV – Requirements and Best Practice

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ENSMOV

TOWARDS BETTER ENERGY EFFICIENCY POLICIES

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List of abbreviations

AM: Alternative Measure according to Article 7a of the Energy Efficiency Directive

Art. 7: Article 7 of the Energy Efficiency Directive

CF: Cohesion Fund

CIT: Corporate Income Tax

EBRD: European Bank for Reconstruction and Development

EED: Energy Efficiency Directive 2012/27/EU amended by Council Directive 2013/12/EU, Directive 2018/844, Directive 2018/2002/EU and Regulation 2018/1999/EU

EEFIG: Energy Efficiency Financial Institutions Group

EEOS: Energy Efficiency Obligation Scheme according to Article 7a of the Energy Efficiency Directive

ENSMOV: Enhancing the Implementation and Monitoring and Verification Practices of Energy-Saving Policies under Article 7 of the Energy Efficiency Directive

EPBD: Energy Performance of Buildings Directive 2010/31/EU amended by Directive 2018/844/EU and Regulation 2018/1999/EU

EPC: Energy Performance Contracting

ERDF: European Regional Development Fund

ESCO: Energy Service Company

ESG: Environment, Social and Governance

ESIF: European Structural and Investment Funds

EU ETS: European Union emission trading system

GDP: Gross Domestic Product

GNI: Gross National Income

MRV: Monitoring, Reporting and Verification

MS: Member States

SME: Small and Medium Enterprises

TPF: Third-Party Financing

WhC: White Certificates

VAT: Value Added Tax

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ENSMOV Project

ENSMOV is an EU-funded project aiming to support public authorities and key stakeholders in 13 Member States (MS) and the UK, represented by its consortium (Austria, Belgium, Bulgaria, Croatia, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Romania and the UK, addressing all 27 MS, the UK, and accession countries) to monitor, revise, improve and complement the design and implementation of their national energy efficiency policies by developing resources on practical and strategic issues arising from the Article 7 EED. ENSMOV follows on from two other very influential projects that have helped to shape Member State policies to address Article 7 requirements of the EED – IEE ENSPOL (www.enspol.eu) and H2020 MULTEE (https://multee.eu/).

ENSMOV has the following strategic objectives that will deliver impacts beyond the duration of the project:

a) to ensure that energy efficiency policies do not only promise, but also realise a major, long-term contribution to the energy, environmental, economic and security goals of the EU and MS under the Energy Union; and

b) to sustain an active platform and community for knowledge exchange of best practices in policy development and implementation of Article 7 EED policies, strengthening cooperation and improving the dialogue between national policymakers and stakeholders across the EU.

Report Introduction

Topics described in this report were chosen based on gaps and needs analyses conducted under the ENSMOV project through survey and desk research. This report focuses on financial topics from the perspective of policy design/redesign ranked very high in terms of their priority by the stakeholders. The topic "*Ensuring the sustainability of the EEO scheme/alternative measure(s) in terms of re-financing (e.g., through cost recovery for obligated parties)*" was ranked as second most important by the key stakeholders (ministries, public authorities, policymaker, national agencies or implementing bodies for Article 7 EED). The topic "*Designing the policies in order to minimise the costs for all parties involved"* was ranked as fifth most important by the key stakeholders and the most important by the second group of stakeholders (energy/environmental/industrial/trade associations, market operators, universities/research centres/NGO, think tanks, financial institutions involved in energy policies, consultancies dealing with energy policies). The suggestions and comments included in the survey were also considered to prepare the report. Those included the need for information about:

- Green finance instruments to leverage energy efficiency investments
- Mobilisation of new financial instruments through funds and re-financing tools
- Examples in relation to accessing and managing EU funding
- Cost paid by the citizen (price of energy)
- Cost effectiveness of alternative measures
- In-depth analysis on design and structural elements of policies (in the context of financial aspects)

Three out of fifteen identified gaps are connected the topic of this report. Those gaps addressed include in particular:

1. Ensuring the (financial) sustainability of energy efficiency obligation schemes
2. Ensuring the sustainability of subsidy programmes
3. Designing policies that are effective at mobilising private resources to invest in energy efficiency

The topic of financial sustainability and cost effectiveness of policies in the context of Article 7 EED is strongly connected to the MRV aspects, which are described in more detail in another ENSMOV report titled *"Cost effectiveness for Monitoring, Reporting and Verification"*.

Introduction

All policies under Art. 7 require some resources of different manner to deliver results that can be reported under the Art. 7 target. The monitoring, reporting and verification costs occur in all policies. Providing financing and cost effectiveness by design are key to the financial sustainability of Art. 7 policies.

Availability of funding is crucial for many policies to deliver results. Various funding options could be considered and many of them depend on political support and priorities. The choice of source could also impact the scope and duration of the programme. Some of the funding options are available only

in specific regions or dedicated to chosen target areas. Designing a mix of policies (Alternative Measures and Obligation Schemes) that take advantage of multiple available funding options could support reaching their targets. Proper use of multiple funding options could decrease the risks and uncertainties connected with each source of financing.

Cost effectiveness of policies can be evaluated from various perspectives. For the purpose of this report, cost effectiveness is evaluated from the broad perspective accounting for the benefits and costs of all stakeholders involved as well as the impact on the public budget.

Cost effectiveness of policies could decrease the need for financing and, therefore, increase the sustainability of the scheme in place. Programmes that are effective in mobilising private resources lessen the need of using state budget or other funding sources and could be sustainable in the long term. Innovative financing solutions that tackle specific barriers for the implementation of projects could be used in some sectors.

When analysing cost effectiveness of Art. 7 EEOS or AM, it is important to distinguish between different types of costs as each type can be addressed in a different manner. Typically, the cost structure can be split into:

Programme costs (also support costs): This includes costs of the support provided to the stakeholders implementing energy efficiency measures. In the case of most AM, it encompasses the total grant amount usually covered from the public budget (either directly or through managing institutions). In the case of EEOS, it covers all costs borne by the obligated parties required to meeting their targets. Similarly to AM, a significant share of those costs consists of grant payments to customers (or purchasing certificates on the market) to fund energy efficiency measures partly (or in some cases fully). There is also a range of other programme costs depending on the design of the EEO, which could include, among others, the pay-to-save or buy-out costs, or transaction costs in the case of trading certificates on commodity exchange. In addition to providing subsidies to programme participants, obligated parties need to spend financial resources on lead generation (finding consumers and businesses willing to receive energy efficiency measures), internal administration of the programme, contracting installers, liaising with third-parties promoting energy efficiency measures on their behalf, reporting, and monitoring and verification where required.

Societal costs (also investment costs): These include all costs resulting from the investment decision. A part of those costs is usually covered by some kind of subsidy support (directly from the obligated parties or by the purchase of certificates for the EEOS). In principle, most of those costs are independent of the kind of scheme that was used to support the actions but can be significantly different between measures and sectors.

Administrative costs (also running administrative costs): This is a subset of costs typically borne by the institution managing the policy (AM or EEOS). It includes the costs for setting up the mechanism. For EEOS, the cost is borne by regulators or other managing bodies to establish the rules for an EEO, oversee the implementation of the EEO (at a high level), verify/estimate/evaluate results the EEO actually achieved and report on its outcomes. The term 'administrator costs' is sometimes used in the US instead of programme costs (see (Megan A. Billingsley, 2014)). In this report, the term administrative costs is used to describe the costs to public agencies of administering the EEO rather than the cost to the utilities.

For the EEOS, it is typical that another part of the administrative costs is defined separately as start-up cost, which include the establishment of new procedures, guidelines, training of staff, consultations. Start-up costs are usually higher than yearly running administrative costs, thus sometimes important to mention separately.

Funding options for Art. 7 policies

The most common funding sources for Art. 7 EED policies are public budget, EU funding, environmental or energy taxes, ETS funds and on-bill financing.

Using public budget as a funding source can assure sustainability and a wide scope of the programmes. Programmes funded from public budget can produce many benefits, such as job creation as well as health and environmental impact, and could be repaid in part through the increase in tax revenues (e.g. VAT and CIT) via the mobilisation of the market. However effective, this way of financing is dependent on the political support for the programme, the lack of which could lead to significant cuts or to the termination of the programme altogether. The risk is even higher if the programmes are not managed in a cost-effective way.

EU funding can also be used as a significant source for Art. 7 policies. The use of EU funding usually requires the commitment from Member States budget as well. The use of EU funding can decrease the impact of programmes on state budgets and in this way decrease the threat of lack of political support. The availability of EU funding, however, is different between Member States (described further in Chapter **Error! Reference source not found.**) and its use could impose additional requirements for the beneficiaries depending on the financing source.

Environmental and energy taxes could be used to finance energy efficiency programmes. Synergies could be utilised between energy and environmental taxes and other Art. 7 policies as the aim of both is remarkably similar (energy taxes are one of the alternative measures under Art. 7 as well). Energy and environmental taxes could increase the risk of energy poverty in the short term, which could be addressed by the energy efficiency policy under Art. 7 supporting those concerned. Co-dependency could also be a downside from a financial sustainability point of view. Tax revenues could be difficult to predict in the long term. Moreover, political support towards tax measures could change in time, affecting policies funded with tax revenues.

Using funds collected under EU ETS for Art. 7 policies could help the sectors impacted by the EU ETS system. Similar synergies as mentioned with environmental and energy taxes could be achieved. The revenues from the EU ETS could be difficult to predict in the long term and influence the financial sustainability of policies financed from the EU ETS.

On-bill financing is a mechanism in which the funds for energy efficiency measures are collected directly from final consumers through energy bills. It can be a separate charge on the energy bill or included in the energy, distribution, or transmission price. This additional charge could be used in multiple ways. Typically, the utility covers the upfront costs of a measure for a consumer, who then repays the costs with the additional charge on their bill. Alternatively, a similar mechanism can be used, which is common for many EEOS, where the obligated party transfers the total or part of the costs of fulfilling the obligation to their clients equally through the tariff. An alternative is to establish

a fund that utilities contribute to, which is collected upfront from the consumers or transferred onto consumer bills. Money collected this way can then be redistributed to support energy efficiency measures and/or cover the administrative costs. All these mechanisms affect the final consumers directly through the increase in energy price. Mechanisms to protect consumers at risk of energy poverty from the financial impact of those policies could benefit the sustainability thereof.

Usually, the effects on final consumers is not very significant and overall benefits exceed the costs (see Chapter Cost effectiveness). However, the increase of costs (either programme, societal or administrative) or lack of monitoring of costs could decrease political support of such policies. Moreover, the increase in energy prices could impact the sustainability of the policy, even if the policy itself did not cause the increase or influenced it less significantly than other factors. The cost effectiveness of programmes funded through final consumers has a significant impact on their long-term sustainability, thus, it should be carefully monitored.

Other funding sources include:

- Income tax – as it impacts the public budget, it has similar implications for financial sustainability as financing directly from public budget
- Private financing – is used for repayable mechanisms that include some benefits for the funder, and could be sustainable as long as the funder shares the benefits
- Mix of sources – sharing the risks and benefits of all funding sources separately, with the advantage of not being dependant on only one, thus being more sustainable
- Dedicated funds – combine multiple financing sources (public budget, environmental or energy taxes, etc.) and, depending on the efficiency of management of the fund, could either increase or decrease the financial sustainability

A survey conducted among ENSMOV partners shows the most common funding sources for policies under Art. 7 EED. A total of 60 policies were reported.

Fourteen of those reported policies use multiple funding sources to cover administrative costs and programme costs (incentive needed to trigger the action) (Figure 1). The remaining 46 policies use single funding sources for those purposes.

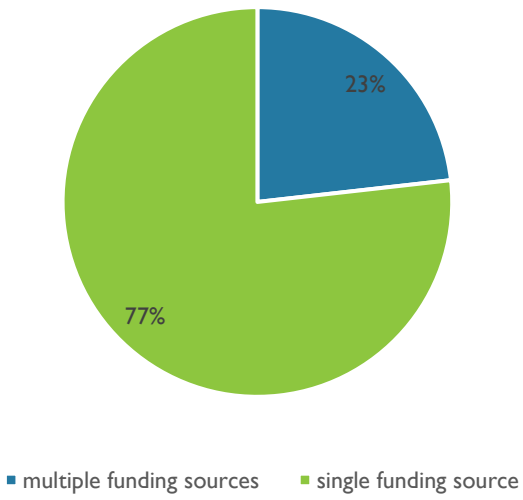

Figure 1: Share of policies using multiple or single funding sources reported in the survey. (Source: survey conducted by KAPE)

Figure 2 illustrates the sources of funding used in different EU countries. The total number of sources is higher than the total number of policies for some countries as some policies use multiple funding sources (e.g. for Hungary, there were four policies reported in the survey and one of them used a mix of two types of funding sources, thus, the total number of funding sources is five).

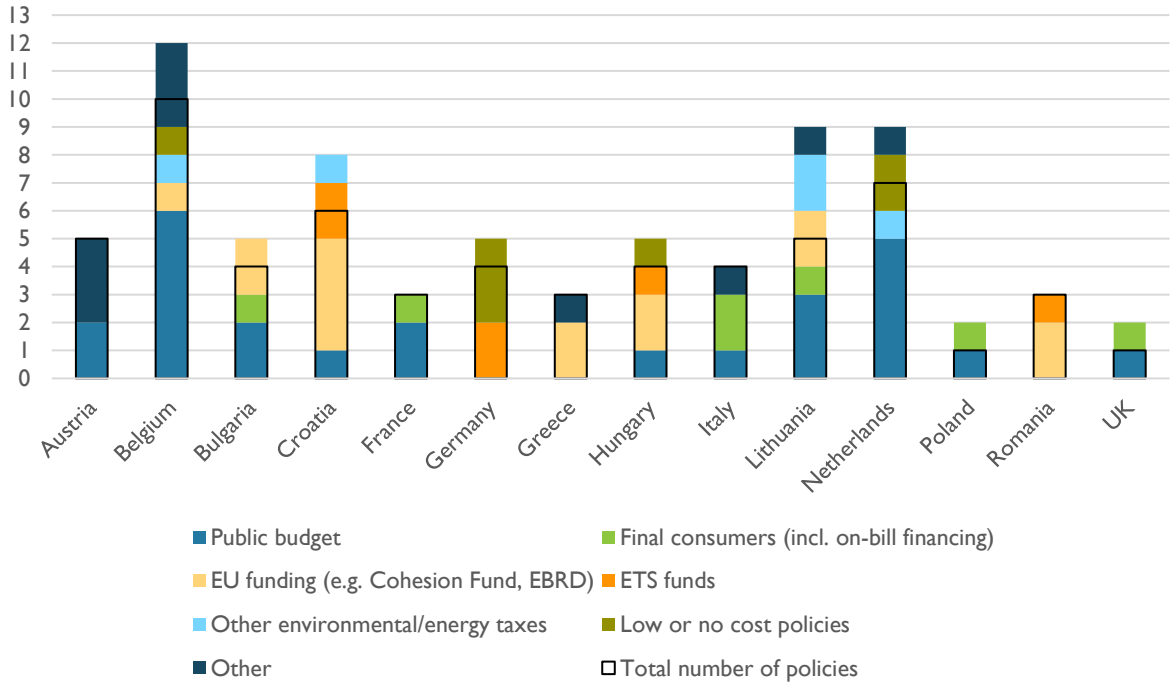

Figure 2: Funding sources used for Art.7 policies in different countries. (Source: survey conducted by KAPE)

Use of EU funding for Art. 7 policies

EU funding may enhance the sustainability of energy efficiency programmes. Croatia, Greece, Hungary, and Romania use EU funding for most of the policies reported in the survey (Figure 2).

For Croatia, EU funding is used in four policies (usually in co-financing). Programmes in Croatia use European Structural and Investment Funds (ESIF) mostly from the European Regional Development Fund (ERDF) for programmes targeting the building sector – one programme for energy renovation of multifamily buildings, a second one for energy renovation of public buildings, another one for energy efficiency measures in tourism, trade and industry, and the last one for energy-efficient public lighting. Those programmes provide support through subsidies and loans.

In comparison, some countries (for example Austria, France, and Poland) did not report the use of EU funding for any of the policies under Art. 7.

EBRD (European Bank for Reconstruction and Development)

The EBRD is owned by 69 countries, as well as the European Union and the European Investment Bank. Among others, the EBRD supports sectors such as energy efficiency, municipal and environmental infrastructure, power and energy, and small and medium-sized enterprises. The projects eligible for financing must have strong commercial prospects, benefit the local economy, help develop the private sector, and satisfy banking and environmental standards.

To be eligible for EBRD funding, the project must be located in an EBRD country of operations. In the EU those are: Bulgaria, Croatia, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, and Slovenia.

Available forms of financing are loans and guarantees. The basis for a loan is the expected cash flow of the project and the ability of the client to repay the loan over the agreed period (1–15 years). A minimum amount of the loan is EUR 5 million, although this can be less in some countries.

The EBRD provides various types of guarantees. These range from all-risk to partial risk guarantees.

The Bank requires significant equity contributions from the sponsors, which must equal or exceed the EBRD's investment. There also must be additional funding from the sponsors or other co-financiers, or money generated through the EBRD's syndications programme. The types of co-financing available include A/B loans (where the EBRD finances a portion of the loan and syndicates the remainder to commercial lenders), parallel loans, export credit agency guarantees, political risk insurances, loans and equity from international financial institutions, and grants. The EBRD typically funds up to 35% of the total project costs for a greenfield project or 35% of the long-term capitalisation of the project company. The EBRD can acquire equity in amounts ranging from EUR 2 million to 100 million in industry, infrastructure, and the financial sector if there is an expected appropriate return on investment.

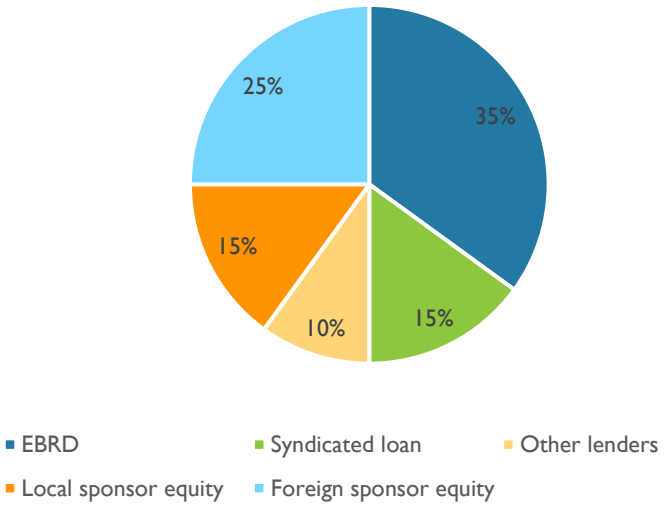

Figure 3: Typical capitalisation structure with the use of EBRD support (Source: KAPE based on EBRD)

To assess the eligibility of a project, the EBRD requires the following information:

- Project information – a brief description of the project, information on the sponsor, details of the product or service that will be developed, production methods, and a review of the market
- Financial information – a breakdown of the project costs and details on how the funds will be used, a summary of the implementation requirements, identification of additional sources of funding, and an overview of the project's anticipated financial performance
- Environmental and regulatory information – a summary of any environmental issues, details of government licences or permits required, subsidies available, import/export restrictions, border tariffs, and currency restrictions

Applications are only accepted from commercial companies or by an intermediary authorised to act for them.

More information about EBRD can be found at: https://www.ebrd.com/home.

ESIF (European structural and investment funds)

Over half of the EU funding is channelled through the five European Structural and Investment Funds (ESIF). Two of these funds, which are used to support Art. 7 policies, are the European Regional Development Fund (ERDF) and Cohesion Fund (CF).

ERDF (European Regional Development Fund)

The European Regional Development Fund (ERDF) promotes balanced development in the different regions of the EU. Financial support is provided for the development and structural adjustment of regional economies, economic change, enhanced competitiveness as well as territorial cooperation throughout the EU.

One of the ERDF priority areas is a greener, low-carbon and circular economy. Financing is provided on energy investments, the integration of environmental considerations, the improvement of energy efficiency and the development of renewable energies, environmental investments including

promotion of sustainable production patterns in SME through the introduction of cost-effective environmental management systems and the adoption and use of pollution-prevention technologies.

Member States can allocate the funds to projects that fit the goals of the ERDF. The European Commission negotiates and approves the National Strategic Reference Frameworks and Operational Programmes proposed by the Member States and uses these as a basis for allocating resources. The European Commission is involved in overall programme monitoring, pays out approved expenditure and verifies the national control systems.

The ERDF resources allocated will depend on the category of region:

- More developed regions whose GDP per capita is above 90% of the EU average
- Transition regions whose GDP per capita is between 75% and 90% of the EU average
- Less developed regions whose GDP per capita is below 75% of the EU average

The level of co-financing required in projects financed by the ERDF depends on the development of the regions concerned. In the less developed regions (and outermost regions), the ERDF can finance up to 85% of the cost of the project. In the transition regions, this can be up to 60% of the cost of the project, and in the more developed regions up to 50%.

Some ERDF resources must be channelled specifically towards low-carbon economy projects:

- More developed regions: 20% of funds
- Transition regions: 15% of funds
- Less developed regions: 12% of funds

According to the Commission proposals, in the programming period 2021–2027, around EUR 200.6 billion will be allocated to the ERDF (including EUR 8.4 billion for the European Territorial Cooperation goal and EUR 1.5 billion of special allocations for the outermost regions).

More information about ERDF can be found at:

https://ec.europa.eu/regional_policy/en/funding/erdf/.

Cohesion Fund

The Cohesion Fund aims to reduce economic and social disparities and promote sustainable development.

The CF supports the shift towards a low-carbon economy in all sectors by promoting the production and distribution of energy derived from renewable sources; promoting energy efficiency and renewable energy use in enterprises; promoting the use of high-efficiency co-generation of heat and power based on useful heat demand.

The Fund is reserved for Member States whose gross national income (GNI) per capita is less than 90% of the EU average. During the 2014–2020 programming period, the Cohesion Fund is providing resources to 15 Member States: Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia and Slovenia, but not all of these countries use the money to finance energy efficiency policy instruments for the Art. 7 EED

requirements. The post-2020 Cohesion Fund will finance projects in the same 15 Member States as in the 2014–2020 programme period.

For the 2021–2027 programme period, the proposed allocation to the Cohesion Fund is EUR 41.3 billion. The level of financing from the CF for a project can amount to up to 85% of its cost.

The Fund is subject to the same rules of programme, management and monitoring as the ERDF and ESF through the Common Provisions Regulation.

More information about the CF can be found at:

https://ec.europa.eu/regional_policy/en/funding/cohesion-fund/.

Summaries of the programmes financed under the ERDF or The Cohesion Fund, prepared by each country and/or region, can be found at:

https://ec.europa.eu/regional_policy/index.cfm/en/atlas/programmes/?fbclid=IwAR1dN6y0WcSpdhVVTWGodBOkoKiaUq0GaZeShGZSi0I5e0GV0GYpyuOuHfU.

Cost effectiveness

Many factors should be considered to evaluate the cost effectiveness of policies for Article 7 EED. The typical cost structure of policies includes implementation costs, administrative costs (which comprise the costs of MRV), project costs (covering all investment and maintenance costs for each project), and support costs (part of the project costs that are not financed by investors but through subsidies, or other forms of support that are needed to trigger the investment).

The above-mentioned costs can be subject to optimisation. Limiting the negative effects of the free rider phenomenon[1] and double counting[2] at the planning or redesigning stage could increase the cost effectiveness.

The wider benefits of the energy efficiency actions are also important to consider. Direct benefits resulting from energy savings reported are not the only positive impact of policies under Art. 7. Multiple benefits of those policies include among others: positive impact on health, mobilisation of the market, environmental impact, social impact, higher quality of products and services, favourable working conditions, benefits for energy infrastructure and decrease in operational costs not directly related to energy. More information about those benefits can be found here:

https://www.mbenefits.eu/

https://combi-project.eu/

https://www.odyssee-mure.eu/data-tools/multiple-benefits-energy-efficiency.html

[1] Described at: http://www.article7eed.eu/index.php/technical-key-issues-a-guide-to/free-rider-phenomenon

[2] Described at: http://www.article7eed.eu/index.php/technical-key-issues-a-guide-to/double-counting

Cost effectiveness in AM

Alternative Measures in the context of Article 7 EED cover a wide range of different instruments, among which are:

- Energy or CO_2 taxes
- Financing schemes and instruments, and fiscal incentives
- Energy Efficiency National Fund
- Regulations and voluntary agreements
- Standards and norms
- Energy labelling schemes
- Training and education, including energy advisory programmes
- Other

Cost effectiveness of these policy measures can be compared based on their total costs and quantified results. However, the national context, synergies between policy measures, target sectors, and the overall goals of the policy should also be taken into consideration. In general, the policy measures that are efficient in mobilising private resources are considered cost-effective. A range of innovative financing instruments aimed to increase the leverage of public to private capital is described in this context. Those instruments could be implemented as a stand-alone policy or through the Energy Efficiency National Fund to support reaching the Art. 7 EED target.

Innovative financing instruments

The financial sustainability of energy efficiency policies hinges on their cost effectiveness. Designing policies that are effective at mobilising private resources to invest in energy efficiency actions can be a solution to assure long-term sustainability through cost effectiveness. Examples of financial instruments created to encourage investment in energy-efficiency improvement projects are outlined in the following.

Third-party financing

Third-party financing refers solely to debt financing. The project financing comes from a third party, usually a finance institution or an investment fund (not from internal funds of the ESCO or of the client). The third party either claims the rights to the energy savings or takes a security interest in the project assets.

There are two third-party financing agreements associated with Energy Performance Contracting:

1. In the first arrangement, the financial resources crucial for project implementation are borrowed by the ESCO.
2. In the second arrangement, the client takes a loan from a finance institution, while the ESCO provides guaranteed energy savings.

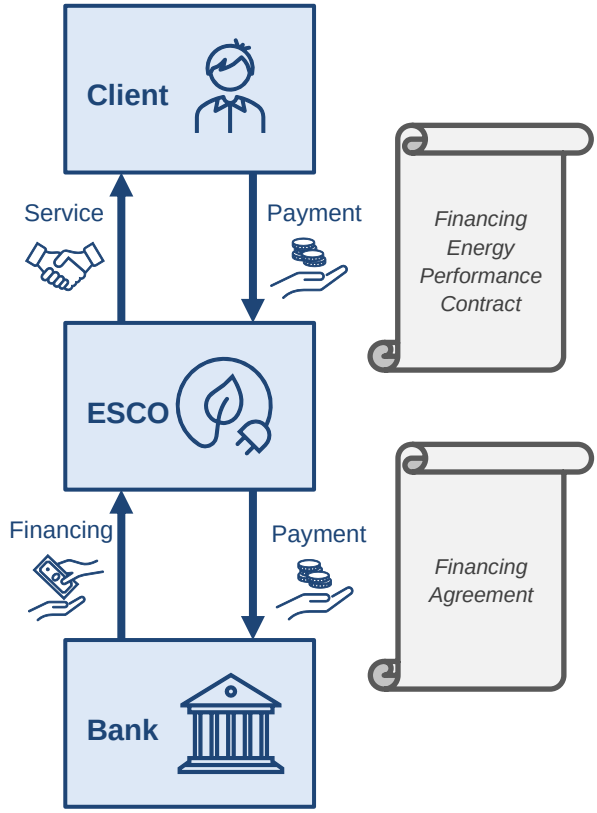

Figure 4: TPF with ESCO borrowing the financial resources. (Source: KAPE)

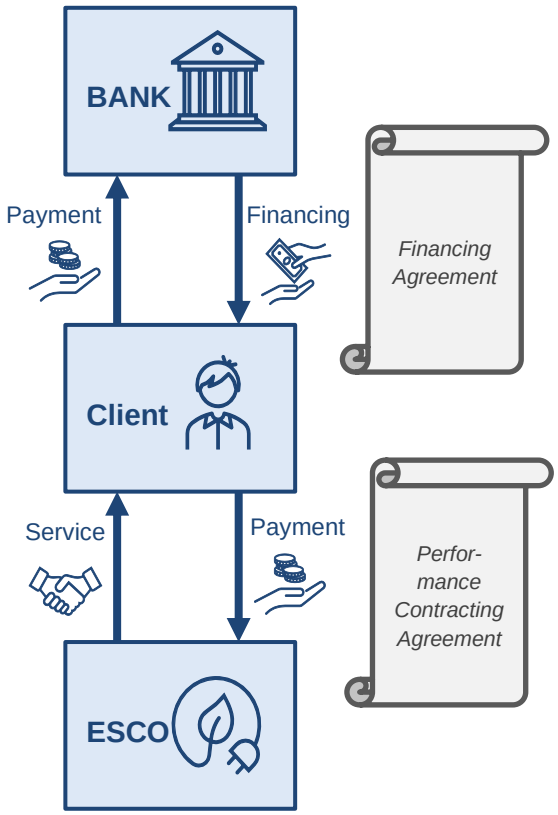

Figure 5: TPF with client borrowing the financial resources. (Source: KAPE)

Revolving funds

Revolving funds are established in order to achieve a certain goal while remaining self-sufficient and sustainable. The initial supply of financial assets usually is provided by the public sector – development banks or government agencies.

A revolving fund is a fund raised with a particular purpose, which remains available to the same borrowers without time limitation. The borrowers repay the original sum within a given period of time. Usually, borrowers are charged an additional sum (interest) that protects the fund from depletion (caused by administrative costs, inflation, non-payments, etc.). The repayment of the loan, together with interest, enables to replenish the fund and make further loans.

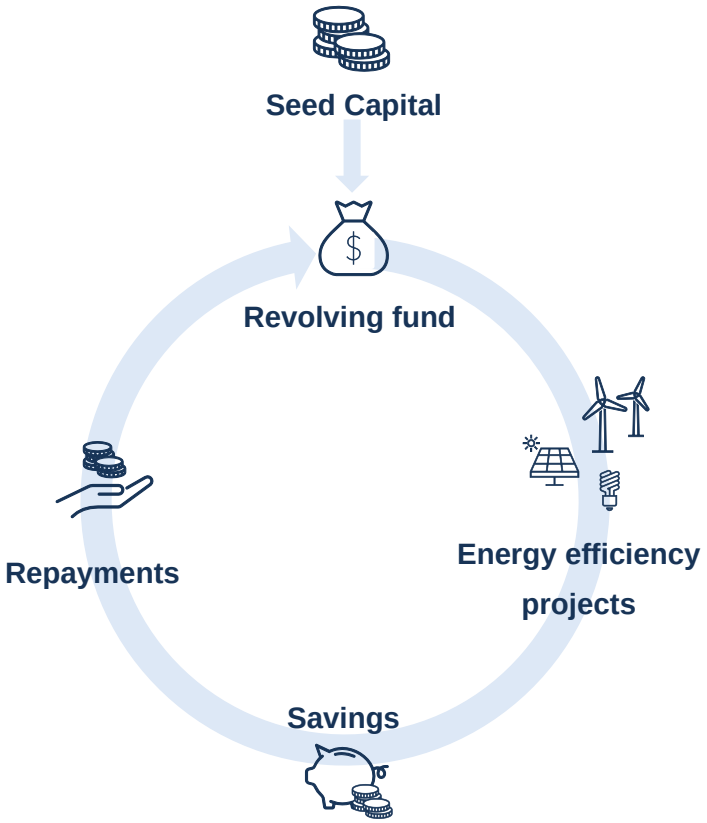

Figure 6: Energy revolving fund. (Source: KAPE)

Soft loans

A soft loan is a loan with no interest or a below-market rate of interest. Soft loans have relatively lenient terms in comparison to other loans available on the market, such as extended grace periods, interest holidays and prolonged repayment duration.

Due to easier conditions (lower interest rates, longer amortisation schedules), soft loans are generally not provided by private financial institutions. Usually, soft loans are given by development banks, affiliates of the World Bank or government agencies in order to encourage investments in projects improving energy efficiency.

Soft loans are often used by local authorities to implement energy-performance improvement projects (e.g. renovation of public lightning, energy renovation of schools and hospitals). The reduction of energy consumption achieved by implemented investments generates financial savings, which are used to repay the soft loan. Similarly, soft loans are given in the residential sector to encourage citizens to carry out energy renovation works in their homes.

Guaranteed funds

A guaranteed fund is a type of collective investment instrument that guarantees to pay back a pre-determined percentage of the invested capital. Finances from the guaranteed fund are used to implement energy efficiency investments, which generate energy and financial savings for supporting fund financing in turn.

Examples of financial instruments implemented in energy efficiency programmes

There are numerous programmes using various financing mechanisms to provide help with implementing energy performance projects and policies. Examples of some of these programmes are described below.

Bulgarian Energy Efficiency Fund

The Energy Efficiency and Renewable Sources Fund (formerly known as the Bulgarian Energy Efficiency Fund) is a revolving energy efficiency fund under the form of an independent legal entity (it operates as a public private partnership) established in 2005. It got initial funding from the Global Environment Fund through the World Bank's International Bank of Reconstruction and Development, from the Government of Bulgaria, the Government of Austria and from the Bulgarian private sector. It aims at improving energy efficiency and supports the use of renewable energy in public, industrial and residential buildings.

Project eligibility criteria:

- The project must apply a well-proven energy-saving technology (e.g. refurbishment of buildings, fuel replacement, thermal insulation reconstruction of heat sources and heat distribution networks, reconstruction of heating, ventilation, air-conditioning and lightning systems, small cogeneration plants).
- At least 50% of a project's benefits must come from energy savings.
- Investment payback period: up to seven years
- Investment range: BGN 30,000–3,000,000 (approx. EUR 15,338–1,533,800)
- Annual interest rate
- Project developer's equity contribution: at least 10% in case of co-financing (EERSF & commercial bank)
- Credit maturity period: up to seven years

Financing instruments used in the Energy Efficiency and Renewable Sources Fund:

- Loan with 4–7% p.a. interest for municipalities, hospitals, universities and quasi-government organisations
- Loan with 3.5–5.5% p.a. interest for corporate clients and private sectors
- Partial Credit Guarantees: up to 80% on a "pari passu" basis and up to 50% on a first-loss basis after the bank creditor, but no more than BGN 800,000 (approx. EUR 409,030) of the approved bank credit
- Portfolio Guarantees: up to 5% of the portfolio (but no more than BGN 800,000 – approx. EUR 409,030)
- Guarantee Fees: 0.5% to 2% on an annual basis, exceptions are possible

More information about the Bulgarian Energy Efficiency Fund can be found at: http://citynvest.eu/content/bulgarian-energy-efficiency-and-renewable-sources-fund-eersf

http://www.res-legal.eu/search-by-country/bulgaria/single/s/res-hc/t/promotion/aid/loan-bulgarian-energy-efficiency-fund-bgeef/lastp/111/

EuroPACE

One of the examples of third-party financing is program EuroPACE, where PACE acts as third-party financing energy efficiency improvement projects in residential area. Repayment is carried out in form of special property tax bill attached to the building.

EuroPACE is a three-year project that started in March 2018. In 2019, the EuroPACE pilot programme was launched. The goal is to boost energy efficiency investments in existing buildings – residential and non-residential. During the three years of the programme, the focus will be initially put on residential buildings and the pilot project will be conducted in Spain (Olot). The programme will be replicated in other European countries. Based on the legal and fiscal analysis of the then EU-28 (now EU-27 and the UK), eight countries have been selected for further investigation: Austria, Belgium, Netherlands, Italy, Poland, Portugal, Romania, and Spain.

EuroPACE can be used to pay for energy efficiency, renewable energy, and water conservation upgrades in buildings.

PACE financing covers up to 100% of a project's costs and is repaid as a special assessment added to a property tax bill over a term of up to 20 years. Financing is repaid via a charge added to a property and attached to the property – it thus can be transferred to a new owner upon sale.

In addition, EuroPACE helps to identify and select which energy efficiency improvements to make, and assists in finding contractors. Technical and customer assistance is provided throughout the process.

More information about EuroPACE can be found at: https://www.europace2020.eu/.

Green Bonds

The Green Bond programme of the World Bank (International Bank for Reconstruction and Development) supports the transition to low-carbon and climate-resilient development and growth in client countries by financing energy performance projects through high quality credit.

Green Bonds were created to fund projects that have environmental and/or climate benefits. The goal is to open access to capital for sustainability-related projects. Green Bonds may finance sectors connected to energy, energy efficiency, transport, water, waste management, land use, or the adaptation of infrastructure.

Green Bond purchasers are typically institutional investors, often with either an ESG (environment, social and governance) mandate or an environmental focus. Other buyers include investment managers, governments, and corporate investors.

Projects defined as eligible for the World Bank's Green Bond programme are selected by World Bank environment specialists. Examples of qualified projects are solar and wind installations, new technologies that permit significant reductions in greenhouse gas emissions, or rehabilitation of power plants and transmission facilities to lower greenhouse gas emissions.

Investors in Green Bonds benefit from:

- Funding green projects without taking any additional risk or cost
- Greater transparency of a bond's use of proceeds

The World Bank supervises the implementation of all projects it supports. Client countries execute the development projects in accordance with the project loan agreement.

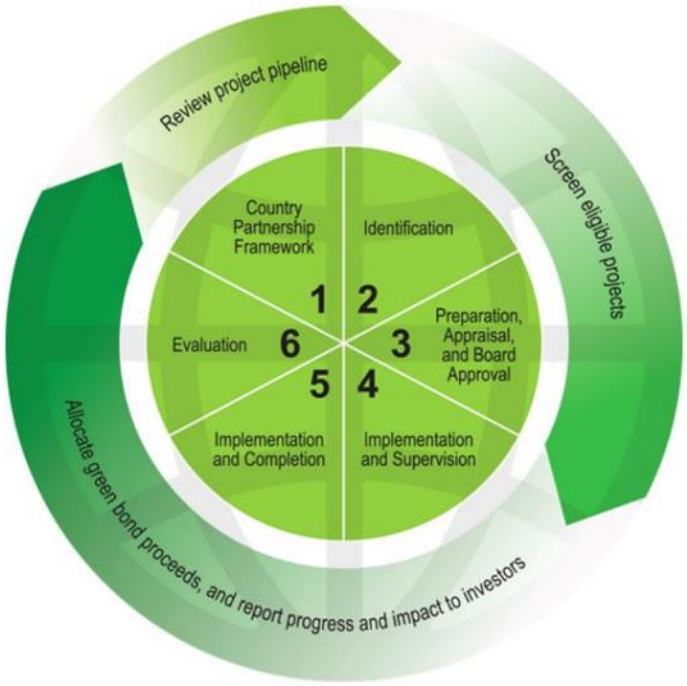

Figure 7: Lifecycle of a project financed by IBRD (source: http://pubdocs.worldbank.org/en/217301525116707964/Green-Bond-Implementation-Guidelines.pdf)

More information about Green Bonds can be found at: https://treasury.worldbank.org/en/about/unit/treasury/ibrd/ibrd-green-bonds.

FinEERGo-Dom

FinEERGo-Dom is a four-year project (started in 2019) that refines and implements guaranteed financing schemes for energy efficiency and renewable energy in deep renovations of buildings. The project builds on the experience of the Latvian Building Energy Efficiency Facility, which is based on an existing example providing 20-year guaranteed performance contracts to owners through an on-bill payment scheme.

Capital for the investment implementation usually comes from third-party financing with the ESCO borrowing the financial resources. Then, all financial liabilities are taken over by a financial institution (e.g. National Fund for Environmental Protection and Water Management), which creates a form of revolving fund with low interest rates and long payback period. The building owners repay the debt, which enables to replenish the fund.

The mechanism facilitates long-term Energy Performance Contracts (EPCs) for deep renovation of buildings. By creating the financial ecosystem for deep renovations, the projects establish trust, communication, and transparency among building owners, ESCOs and financial institutions.

A pilot country is Poland and the partner organisations in Austria, Slovakia, Romania, and Bulgaria will be replicating in their countries.

The programme supports the owners of the buildings by providing them with funds for the investment, consultancy, and assistance in carrying out the entire process as well as certainty of the effectiveness

of the undertaken actions. The public funding will work as leverage for the ESCO to take on new projects without the need to wait for repayment of the projects already implemented. The stimulation of the ESCO market will help to utilise the potential for energy efficiency in the SME sector. Standardising and scaling up the investments in energy efficiency and environment protection will increase the trust of banks and their involvement in the market.

More information about it can be found at: https://fineergodom.eu/.

Cost effectiveness in EEOS

EEOS are often described as cost-effective policies since usually the costs incurred by the obligated parties are significantly lower in comparison to the costs of energy. Moreover, other costs such as administrative costs and start-up costs sum up to only a small fraction of total costs of those mechanisms (Rosenow & Bayer, 2017).

The differences between policies and the lack, or incoherent way, of presenting information about costs to the public makes it difficult to compare the EEOSs in Europe in terms of cost effectiveness. Previous studies on that topic ((Rosenow & Bayer, 2017), (Enspol, 2015)) showed that the costs for obligated parties are typically between 4 EUR/MWh and 11 EUR/MWh, which is similar to what was shown in some of the ESMOV factsheets (for Denmark in 2016 and 2017 it was 6 to 7 EUR/MWh assuming an action lifetime of ten years; for Ireland 56 EUR/MWh (first year savings) in 2016; for France between 6.7 and 8 EUR/MWh based on the recent market prices).

Benefits that result from EEOSs usually also exceed the costs. The net impact of the increase in energy prices to cover the costs of EEOS is usually lower in a long term than the impact of cost decrease resulting from energy savings. This could be further enhanced with the periodic redesign of the EEOS that is aimed to increase cost effectiveness. Additionally, the energy efficiency measures can generate other benefits as mentioned in the section above.

Influence of policy design on cost effectiveness of EEOS

Buy-out mechanism

Most Member States included a mechanism, usually referred to as “pay to save” or “buy-out”, which allows obligated parties to pay a fixed fee instead of delivering the energy savings. The way this mechanism affect costs for obligated parties is different between Members States. A short survey about those costs was conducted among ENSMOV partners. Results of that survey are presented in Figure 8.

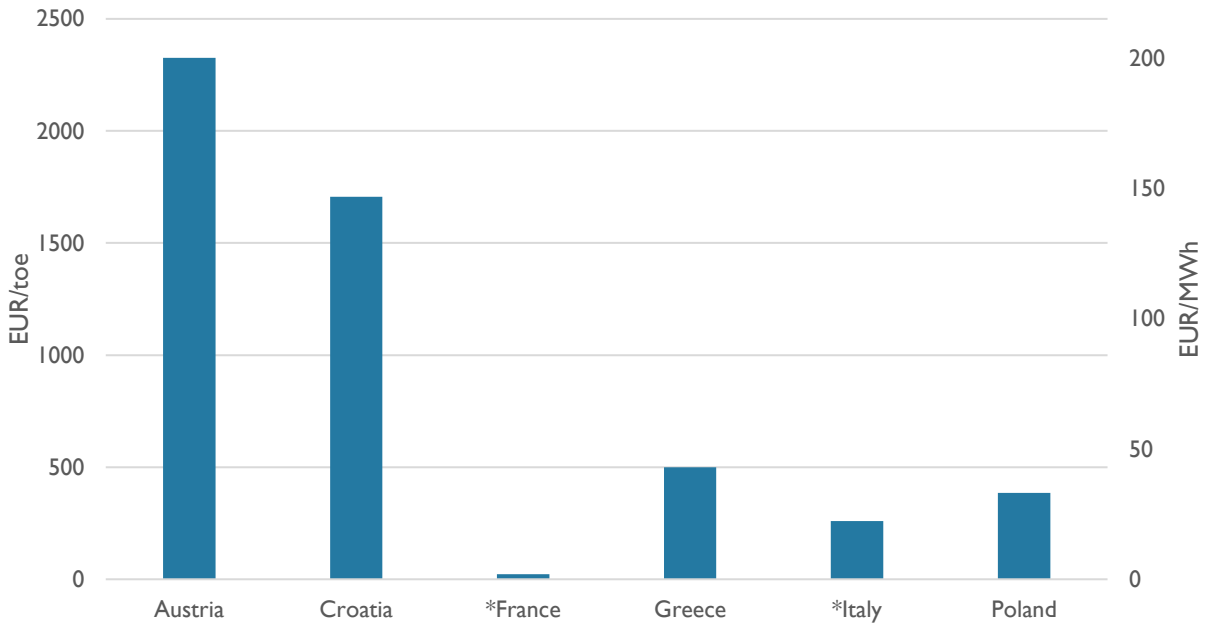

Figure 8: Buy-out or pay-to-save costs (for first-year savings *for Italy the value is in yearly energy savings and for France in cumulative yearly energy savings). (Source: survey conducted by KAPE)

It is important to notice that the price in Figure 8 is referring to first-year savings for most countries except Italy and France, where it refers to one year of energy savings. In case of first-year savings, it can be assumed that some measures will have longer lifetimes than one year and, thus, will bring benefits not only in the first year, so the cost should represent that. In comparison, yearly savings are taken accounted of for each year and the future savings will be rewarded separately, which decreases the price thereof.

For **Austria,** the reported price is the highest out of the surveyed countries. The buy-out price was determined in 2015 and has not changed since then. It was intentionally quite high to encourage obligated parties to carry out energy efficiency actions by themselves or to gather them from other parties. The funds collected through obligated parties paying the buy-out price, as well as those settled by public authorities, would have been used to execute energy efficiency actions, but the assumption was that the former are able to carry out energy efficiency actions more efficiently than the ministry. In comparison, the cost for the obligated parties decreased in time from 560 EUR/toe to 230 EUR/toe (48 EUR/MWh to 20 EUR/MWh). This happened mostly due to the oversupply of energy savings.

As the buy-out price is much higher for the obligated party than carrying out energy efficiency actions or gathering energy efficiency actions from other parties, this option is rarely used. The final costs for the obligated parties are more influenced by the market for energy savings than by the buy-out price.

For **Poland,** the situation is quite different. The buy-out price was set in 2013 at around 230 EUR/toe (20 EUR/MWh) and was not changed until 2017. The first increase was in 2017 along with significant modifications in rules of the EEOS. It was raised to around 350 EUR/toe (30 EUR/MWh) and has been climbing by 5% each year ever since. The buy-out price affects the market significantly, as the price of energy certificates is usually close to the buy-out price (Figure 9) and the buy-out option was used for

a large part of the obligation in the first period of the scheme when the significant undersupply of certificates was noticed.

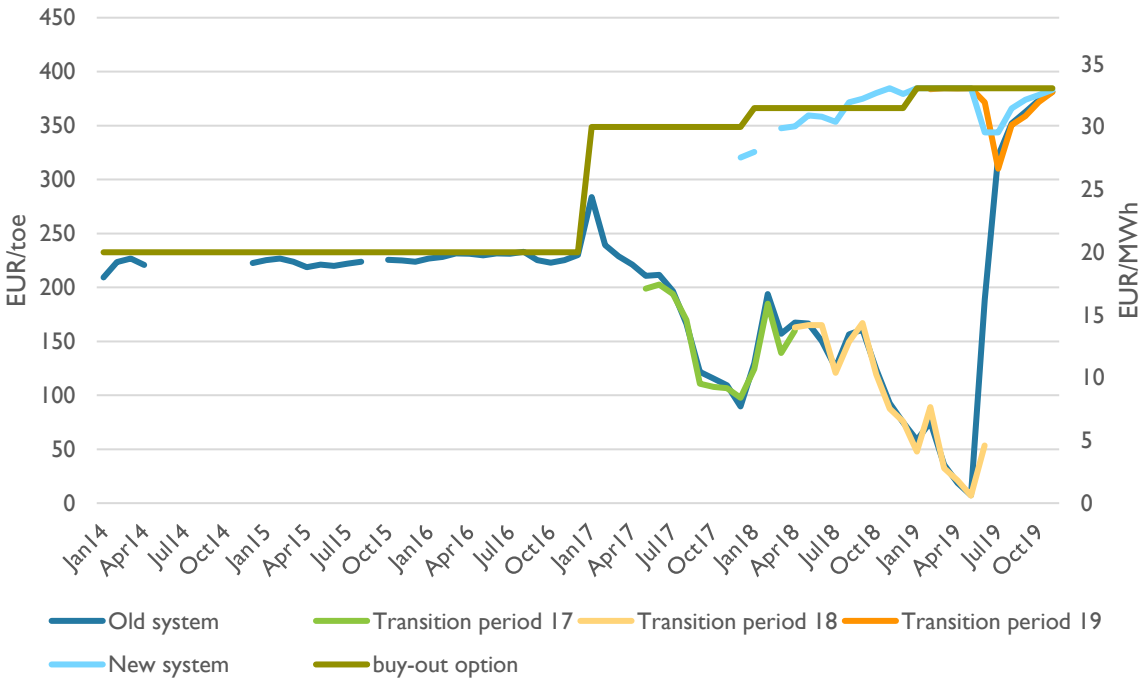

Figure 9: Market prices for WhC and buy-out option in the Polish White Certificate Scheme (source: KAPE based on Polish Power Exchange)

Currently, new rules are in operation that prevent the use of the buy-out option when cheaper certificates are available on the market. The price of the certificates in Poland is still very close to the buy-out price with some fluctuations that result from other factors, such as time period towards expiration date of specific types of certificates or eligibility of certificates to fulfil the obligation in a particular obligation period.

For **France**, the buy-out price is fixed and has only been changed once since the beginning of the EEOS operation. Thus, the buy-out price depends on the quantity of white certificates produced and available.

In mid-2019, the price was just below 7 EUR/MWh of yearly energy savings as shown in Figure 10 and at 8 EUR/MWh of yearly energy savings for "fuel poverty". Overall, this price has been almost continuously rising since 2008 as shown in Figure 10, as each objective set for a period was higher than the previous one.

Figure 10: Evolution of the weighted average buy-out price of white certificates in France (source: ATEE)

Changes in EEOS rules, lack of new deposits, additional control, or the ending of an incentive measure can explain the erratic trend of the French buy-out price. The drop between 2013 and 2016 was mainly due to an incentive bonus on white certificates. The rise that followed from 2017 until mid-2019 was partly due to the lack of visibility between the transition from one period to another.

As the support levels necessary to trigger the action can be different between sectors, or groups of energy efficiency measures, different levels of buy-out options could be set for each. This mechanism will boost cost efficiency if the obligation is split between sectors as well. That way, cost effectiveness could be increased as the amount of support for projects would not only be regulated through the market (approaching a similar average level for all measures) but also reflect the actual difference in societal costs (or investment costs) of the measures. Such mechanisms are in place in Ireland, where there are different buy-out prices for the non-residential sector, the residential sector, and consumers affected by energy poverty. Other regulations can also achieve similar results, e.g. in France, certificates delivered from low-income households will receive an uplift by a factor of 3 making the measures targeting those households more attractive.

Setting the buy-out price relatively high decreases the risk of undersupply, which would enable the market price to reach the equilibrium between supply and demand in later stages. In the initial stage, after the policy is put in place or after significant changes in the design of EEOS are made, a lack of a reference of what the market costs of the measures could be will cause the initial price to be relatively higher than later when the equilibrium is reached. The example of Poland shows that setting the price relatively low increases the risk of undersupply in the initial stages and causes the market to be highly dependent on that price, which usually requires including additional rules to control the use of the buy-out option.

Cost reimbursement for obligated parties

The **Italian White Certificate** (WhC) scheme exploits financing through final consumers to cover the costs for the obligated parties. For this purpose, a regulated fixed fee included in the energy bill

(electricity, natural gas, etc.) is used instead of direct reimbursement calculated by the obligated parties. This mechanism has gone over a few changes to balance better the impact on energy prices for final consumers, increasing cost effectiveness and enabling obligated parties to recover significant part of their costs.

In the first phase (starting form 2005), the fee was linked to the price trend of a basket of energy goods (electricity, natural gas, etc.). In 2014, the responsible authority modified the rules for determining the contribution, linking it to the average price of the WhC spot market in the previous year. This mechanism was appreciated by distributors, as it made it possible to cover a large part of the costs incurred by the distributors themselves; on the other side, this mechanism tended to favour regular purchases of WhCs on the market.

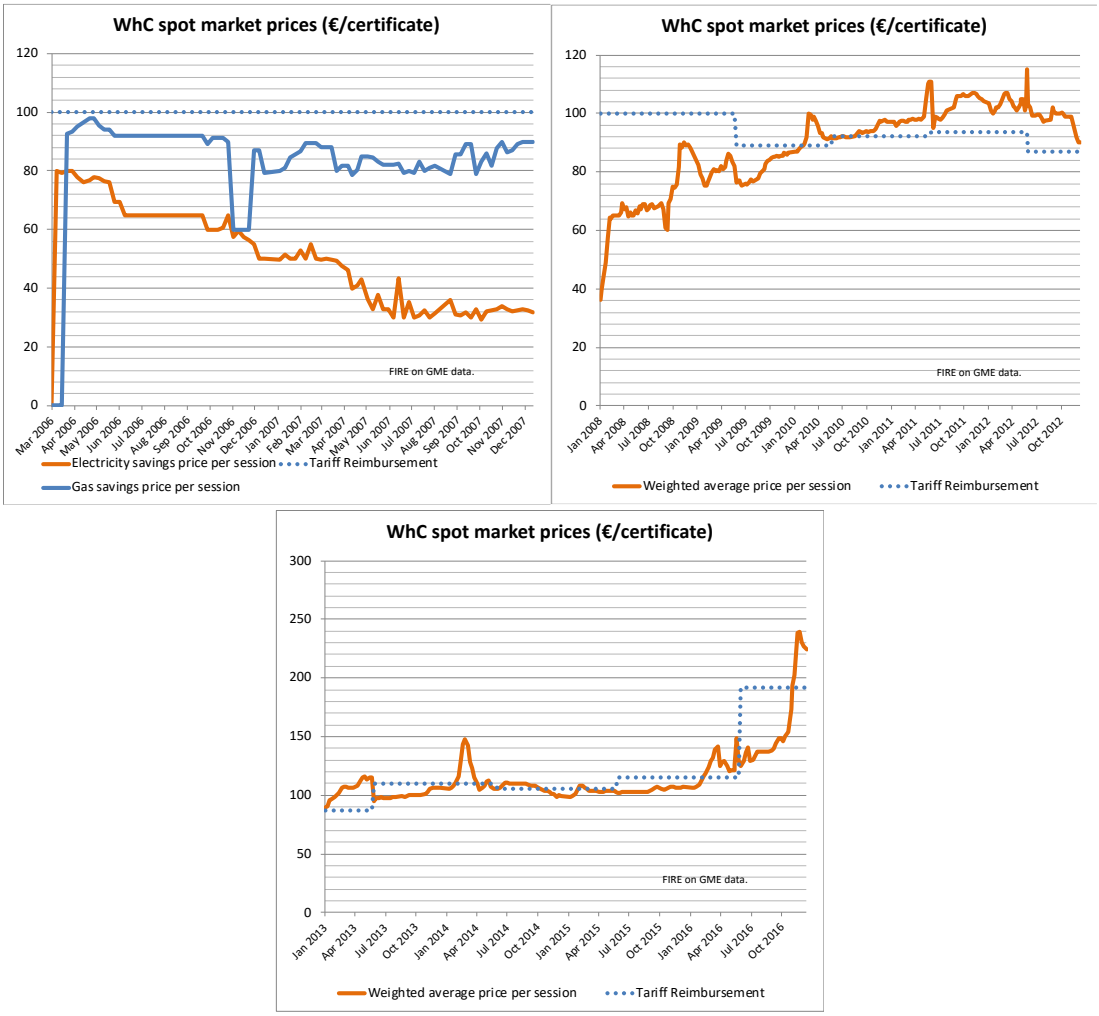

Figure 11: 2006–2016 trend of WhC prices and tariff reimbursement. (Source: FIRE based on Gestore dei Mercati Energetici)

Starting from 2016 until 2018, the WhC market was characterised by a continuous rise in prices, which together with the tendency of obligated parties to fulfil their obligation by purchasing WhC on the market resulted in an increased impact on energy prices. A revision of the rules was made in 2017 to minimise the impact on energy prices. The proposed changes aimed at modifying the methods of defining the tariff contribution without distorting what was in force. This decision was made to avoid too sudden changes in prices on the market. The mechanism to calculate the reference price from the

market used to define the fee was changed. Only prices of certificates that fit in the interval of 12% less and 12% more than the reference price from the previous market session were used to set the new reference price. This was intended to decrease the price fluctuation on the market. However, undersupply of the WhCs on the market caused the continuation of price increase.

Further steps were taken to decrease the impact on energy prices. In 2018, a maximum cap for the tariff contribution fee was introduced.

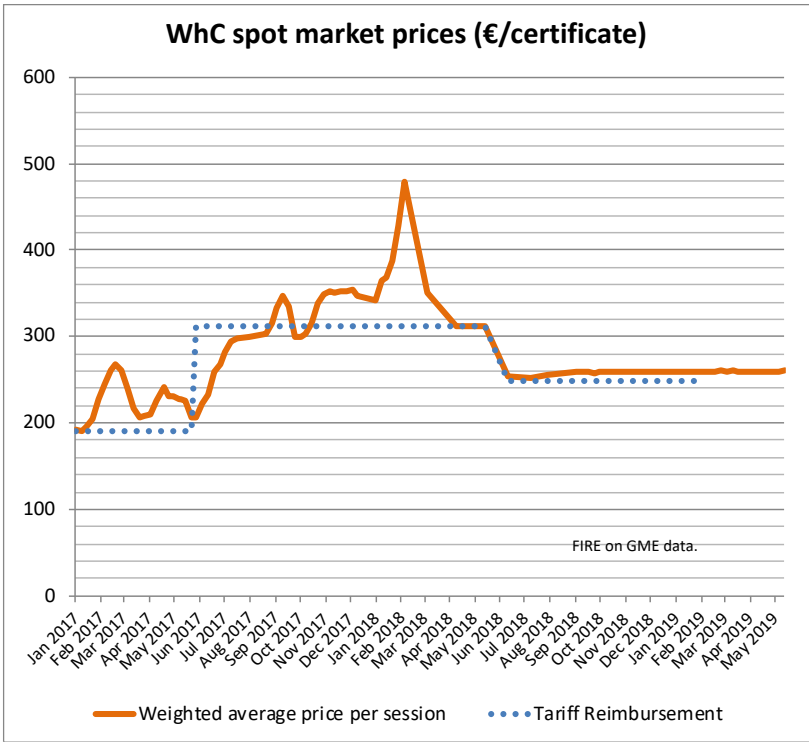

Figure 12: 2016–2019 trend of WhC prices and tariff reimbursement (Source: FIRE based on Gestore dei Mercati Energetici)

More changes were introduced in the last months to incentivise obligated parties to minimise their costs. Those include the so-called *profit-sharing* principle, which encourages obligated parties to reduce the market price of the WhC, sharing with the consumers the benefits derived from a reduction in prices (in terms of lower system cost). This effect is achieved through a multiplicative ratio "δ" that increases the reimbursement for obligated parties for every WhC purchased to fulfil the obligation with a cost below the maximum cap. The lower the price of the WhC is on the market, the higher the "δ" ratio. This mechanism was only proposed as a future change, which is why the effects are difficult to evaluate.

Overall, the Italian example shows that the cost reimbursement mechanism based on the market costs as a reference is very sensitive towards changes on the market. The changes such as undersupply on the market can lead to a significant increase of costs for the final consumers. A set of protective measures with a similar aim as the previously mentioned setting of the intervals of 12% less and 12% more than the reference price from the previous market session in Italy should be incorporated to protect the final consumers and incentivise stakeholders taking part in the mechanism to decrease costs. Some changes in regulations could be introduced in a periodic manner to avoid disrupting the market. The impact of those modifications should be carefully monitored.

Multiplication factors that impact the obligation in EEOS

Mechanisms that independently impact the fulfilment of the obligation in comparison to achieved energy savings (similar to the *profit-sharing* principle in Italy) also exist or existed in other EEOS.

In **France,** the above-mentioned multiplying factor is used to stimulate investments in low-income households.

In fact, part of the obligation has to be carried out for the benefit of low-income households in order to address fuel poverty. And, as an additional incentive, the EEOs has set that operations implemented for the benefit of very low-income households will deliver twice the number of certificates that would have been delivered for the benefit of regular households.

Moreover, the "Coup de Pouce" (boost or push) has been implemented in 2019. Given the applicant has signed a charter of commitment, the volume of certificates delivered will be increased compared to the standardised amount. This only concerns a handful of operation, mainly targeting renovation of residential buildings. Likewise, if the operation targets low-income or very low-income households, the "boosted" volume of certificates will be higher than when targeting regular households.

Overall, multiplication factors have been a decisive tool to reach national renovation targets such as households' insulation and conversion from coal to more efficient heat production. With rising prices, quality checks had to be tightened. The latter then have a strong impact on the building sector which is made up of actors with less flexibility or diversification and therefore tend to be more affected by the regulatory changes.

In **Poland,** an "ω" coefficient was used that could either increase or decrease the volume of certificates compared to achieved energy savings. This mechanism was meant to represent better the actual investment support needed for each investment. Entity applying for certificates could ask for lower number of certificates than resulted from the savings using the "ω" coefficient, thus having a higher chance to receive the certificates, as the "ω" coefficient was one of the main deciding factors in the auction. Yet, this mechanism proved to be ineffective in the early stage of the EEOS operation due to the undersupply of WhC on the market. Many of the applicants decided to ask for increased volume of certificates compared to achieved energy savings (since undersupply allowed for that), which was represented in changes of average "ω" coefficient with each auction. There were other regulations in place controlling the "ω" coefficient used by applicants in the auctions; however, those could only prevent the extreme use of the "ω" coefficient (acceptance of applications with "ω" coefficient significantly different than the average). The mechanism was terminated with the significant changes in regulations in 2016 and is no longer in place in Poland, thus, it is difficult to estimate its impact in the long term or on a market where undersupply is not an issue.

Mechanisms that affect the volume of certificates in comparison to achieved savings will affect the achievement of energy-savings targets. If the volume of the obligation that could be fulfilled with the certificate (or energy efficiency measure) depends on some other factors than actually achieved energy savings, both the energy-saving targets and the fulfilment of the obligation by obligated parties should be monitored separately.

Where to find more Information

http://www.article7eed.eu/index.php/technical-key-issues-a-guide-to/cost-effectiveness-of-measures

https://ensmov.eu/snapshot-of-alternative-measures-in-europe-article-7-eed-as-of-end-2019/

https://ensmov.eu/snapshot-of-energy-efficiency-obligation-schemes-in-europe-as-of-end-2019/

https://www.ebrd.com/home

https://ec.europa.eu/info/funding-tenders/funding-opportunities/funding-programmes/overview-funding-programmes/european-structural-and-investment-funds_en

https://ec.europa.eu/regional_policy/en/funding/cohesion-fund/

https://ec.europa.eu/regional_policy/index.cfm/en/atlas/programmes/

https://ec.europa.eu/regional_policy/en/funding/erdf/

http://citynvest.eu/content/bulgarian-energy-efficiency-and-renewable-sources-fund-eersf

http://www.res-legal.eu/search-by-country/bulgaria/single/s/res-hc/t/promotion/aid/loan-bulgarian-energy-efficiency-fund-bgeef/lastp/111/

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http://www.eefig.com/index.php

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