

## POLICY BRIEF

2<sup>nd</sup> POLICY BRIEF January 2016

*"State of the art in alternative policies to European Energy Efficiency Obligation schemes"*

### Energy Saving Policies and Energy Efficiency Obligation Scheme

#### ENSPOL

ENSPOL is an EU-funded project targeting the effective and proper implementation of Article 7 of the Energy Efficiency Directive in all Member States and beyond. Major objective of ENSPOL is the establishment, revision and implementation of robust Energy Efficiency Obligation Schemes or alternative policy measures to each Member State. At the same time the project envisages the provision of appropriately refined information and supportive strategic tools to all targeted stakeholders. The project is coordinated by the research organization Joint Implementation Network.



Co-funded by the Intelligent Energy Europe Programme of the European Union



## 2<sup>nd</sup> POLICY BRIEF January 2016

# *“State of the art in alternative policies to European Energy Efficiency Obligation schemes”*

### Summary:

The Article 7 of the EU Directive 2012/27/EU on Energy Efficiency requires from Member States to apply an energy efficiency obligation scheme or alternative policy measures that would deliver a certain amount of end-use energy savings over the 2014-2020 period. Almost all Member States have opted for alternative measures, which seems a very flexible route to compliance for the energy efficiency requirements, and enables them to build on their existing policies. Financial/Fiscal schemes have a leading position among the sum of measures proposed making up more than 40% of the total number of measures. Policy makers opted thus to rely on existing elements (i.e. pre-existing to the transposition of the Directive) by adapting them properly in order to meet the requirements under Article 7 to avoid also additional administrative and monitoring needs new measures entail. In terms of calculation and reporting energy savings approaches of various policies, they are extremely variable and there is an essential difficulty in determining the most appropriate calculation method of savings regarding many issues. This policy brief as an output of the EC Intelligent Energy Europe “ENSPOL” project summarizes the key findings of the alternative measures across EU Member States and provides key lessons learned on their implementation aspects.

### Project Coordinator

**Vlasios Oikonomou**

Joint Implementation Network (JIN)

### Project Dissemination

**Alexandros Flamos**

**Charikleia Karakosta**

University of Piraeus Research Centre (UPRC)





Co-funded by the Intelligent Energy Europe Programme of the European Union

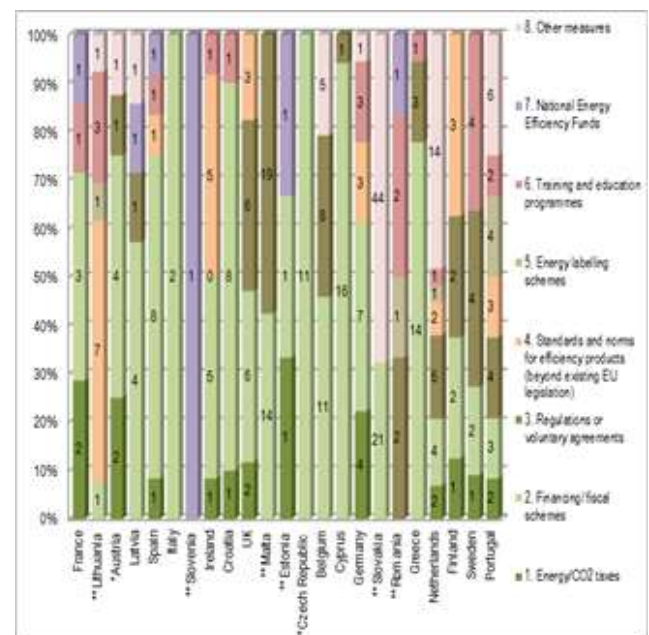
## 1 An overview of alternative policies to Energy Efficiency Obligations in the EU

Article 7 of the EU Directive 2012/27/EU on Energy Efficiency (EED) requires from each Member State (MS) to apply an energy efficiency obligation scheme (EEOs) or alternative policy measures that would deliver a certain amount of end-use energy savings over the 2014-2020 period. Within this framework, the EC Intelligent Energy Europe project ENSPOL aims to support MS, which intend to set up new EEO schemes or enhance the existing ones or their alternative policies. In these series of policy briefs, ENSPOL will provide useful information for policy makers addressing specific issues of Article 7 implementation.

From an analysis of notifications of MS to the EC, almost all MS have opted for alternative measures: 24 out of 28 MS have relied exclusively on alternative measures, or a combination of alternative measures with EEOs. The EED definition of alternative measures includes all the major efficiency policy types that have the effect of reducing end-use consumption (Article 7.9). These are categorized as i) energy or carbon taxes, ii) financing instruments or fiscal incentives, iii) regulations or voluntary agreements, iv) standards and norms, v) labeling schemes, vi) training and education, and vii) national energy efficiency funds. This means adopting alternative measures is a very flexible route to compliance for MS, and enables them to build on their existing policies.

The 24 MS using alternative measures have reported on over 350 different types of measures in total, in favor of the logic of building on what exists rather than introducing a major new type of policy. Despite, the significant amount of alternative measures, the contribution of the

latter in the total saving target is approximately 60%, while EEOs contribute to the remaining 40% of target savings. Figure 1 shows the number of alternative policies in EU MS, classified by policy type. It can be observed that most measures proposed by MS are of financial nature, in the form of grant schemes and low-interest loans, and they outnumber other options. Characteristic cases are countries such as Croatia proposing mostly financial schemes except for two measures, while Cyprus, Greece and Belgium have the largest number of financial schemes proposed. Regulatory measures such as standards that can be considered additional and eligible under Article 7 contribute to a substantial share of savings target in four MS, while training and educational measures appear significant in terms of savings only in two MS.



\* Lack of information about certain measures  
 \*\* Lack of information about the majority of the measures for those countries

**Figure 1: Classification of the different types of policy measures across MS countries**



## 2 Role of financial instruments

Financial/Fiscal schemes have a leading position among the sum of measures proposed making up more than 40% of the total number of measures. All MS have adopted at least one financial scheme, which signals that it is preferable to pursue the targets (with or without EEOs) with a basic instrument that experience has been gained from the MS itself or other MS.

Measures promoting access to finance are usually proposed as grants in the form of equity or to subsidize loans, and fiscal measures (including tax-reliefs). Less utilized measures are direct investments in the form of public procurements, third party financing and direct investments for Research, Development and Demonstration. For the latter case only Austria directly supports research and development projects through the Climate and Energy Fund that encourages research projects in the fields of local and regional public passenger transport, the environmentally friendly carriage of goods and mobility management.

Regulatory measures are also adopted by several MS countries, with UK, Sweden, the Netherlands, Greece, Austria and Germany including them in the mix of measures to comply with Article 7. These are usually adopted in the form of tightening of building regulations for new and existing buildings (e.g. Greece, the Netherlands and especially UK with four measures proposed), minimum standards of energy performance equipment (e.g. Greece, the Netherlands, UK) and requirements to undertake energy audits (e.g. Italy, UK and Sweden).

Apart from more traditional measures promoting access to finance, Article 20(6) also prescribes that: 'MS may provide that obligated parties can

fulfil their obligations set out in Article 7(1) by contributing annually to the Energy Efficiency National Fund an amount equal to the investments required to achieve those obligations. ' Quite a few MS have adopted National Energy Efficiency Funds, yet interpreting the term in various ways, hence increasing the risk of overlaps and double-counting of savings with other co-existing financial schemes. As stated also by the DG Energy study evaluating the national policy measures and methodologies to implement Article 7 of the Energy Efficiency Directive (Ricardo AEA, 2015), Spain is the only country that has adopted a National Fund to supplement the operation of the EEO as described with Article 20(6). This may indicate a greater risk of policy overlaps for other type of funds implemented in combination with other measures. The Spanish Energy Efficiency Fund will be financed directly through the financial equivalent paid by obligated parties to comply with their energy efficiency obligations. In fact limiting the EEO compliance options to the payment of a financial equivalent reassures the viability of the Fund. France has set-up a fund for energy renovations to guarantee green loans for banks and ensure low-cost financing for households. The Guarantee fund is set up in parallel with the 3rd period of the EEO (2015-2017). EEO's obligated parties will be able to fulfil part of their obligation by contributing to this fund.

Support for the human agency including information, education, advice, energy management and best practice dissemination programmes are present in most MS plans opting for alternatives. Sweden is a typical case that introduces four measures of this type. These are all training and educational measures aiming to increase skills particularly in the public sector.





More specifically they aim to assist Municipalities in understanding how to measure energy efficiency in the first place, and also to recruit suitably qualified staff.

Finally, mechanisms affecting energy prices (i.e. energy taxes/CO<sub>2</sub> taxes) have also been proposed by many MS countries. **Savings from energy taxes dominate the share of total estimated savings.** The most extreme example is the case of Sweden, where energy taxation is expected to deliver 100% of savings. The following table (table 1) lists the 8 countries under evaluation describing their options for energy or CO<sub>2</sub> taxes according to their NEEAPS and updated notification reports, by giving a % share only for those countries that enough details were available.

**Table 1: Proposed tax schemes in the EU**

Countries	Proposed Tax schemes (% share in total savings)
Austria	Energy taxes (18,67%), Federal highway toll: Taxes like road tax (1,75%)
Estonia	Excise duties and VAT on fossil fuels and electricity (under review)
France	Eco-taxes for heavy vehicles (under review), Increase in domestic consumption duty based on CO <sub>2</sub> content (under review)
Germany	Energy taxes (34,82%), air traffic taxes (1,98%) and truck taxes (1,43%)
Greece	The fuel tax (i.e. excise duty on heating oil) initially proposed has been suspended.
Netherlands	Increase in duty on diesel (1,59%), Increase in duty on LPG (0,13%)
UK	Climate Change Levy (6,18%), Carbon reduction commitment Energy Efficiency scheme (5,18%)
Sweden	Energy tax and Carbon dioxide taxes (100%)

For MS like Austria, France, the Netherlands and the UK several financial measures are proposed to bring about a relatively small amount of estimated savings. In Sweden although a number of measures are notified only savings resulting from energy or CO<sub>2</sub> taxes are accounted for to meet with the 2020 target savings.

As such assigned savings to alternative measures serve more as an indicative target for most policy measures and are subject to change, since energy savings resulting from measures are often highly dependent on the scale of each measure and the replication potential of these measures. In addition most reported national energy savings data is not uniformly corrected for additionality while some MS might overstate their savings creating thus an altered image on the share of different types of measures in total savings. As a conclusion, the rationale of most MS behind their notified reports on alternative measures was to show that proposed measures are sufficient to meet the Article 7 target; yet MS will make their own decisions on what contribution each measure makes to the total target, as some projections are better evidenced than others.

### 3 Key successful implementation features of alternatives

The majority of policies and measures proposed are an extension of existing measures, which may indicate that some MS have set the basis for energy savings many years before the introduction of the EE Directive, whereas most MS did not have market experience with EEOs. New legal actions and practices would have to be developed with a new EEO, meaning that the entire learning curve would have to start all over again for many MS. Hence policy makers opted to rely on existing elements (i.e. pre-existing to the transposition of the Directive) by adapting them





properly in order to meet the requirements under Article 7 to avoid also additional administrative and monitoring needs new measures entail. As an example, Sweden and UK use a wide range of instruments promoting energy efficiency already in place (33 and 14 measures respectively) before the EED came into force. In addition, France and the UK propose policy packages with existing and new policy measures, with the introduction of those new measures still at a very early implementation stage in need of continuous monitoring.

### 3.1 Energy saving calculation and MRV features

According to the NEEAPs and the updated notification reports, there are three different methodologies used by MS countries to calculate the savings resulting from proposed alternative measures. These are deemed, metered and scaled savings.

**Deemed/top-down savings** are pre-determined, validated estimates of energy and peak demand savings attributable to energy efficiency measures. This method calculates total estimated savings by multiplying the number of installed measures by an estimated (or deemed) savings per measure, which is derived from historical evaluations.

**Metered savings** use before-after measurements in order to estimate energy and demand savings. The Metered Baseline Method lets the user establish a consumption baseline from which the energy savings can be calculated after the implementations of energy savings activities.

The **scaled savings method** (or project impact assessment method) estimates energy demand savings based on engineering estimates. It is

usually applied in the form of measured consumption data before and after the implementation of the activity, combined with industry recognized engineering calculations. This method is commonly used where energy savings are small compared to the overall site consumption, or data for a project's site past electricity consumption is unavailable.

In several MS, such as the Netherlands, no official and standardized monitoring, reporting and accounting protocol is in force for most subsidy schemes, for which deemed savings are likely to be calculated based upon aggregate data from subsidy applications. Likewise, in Greece estimated savings for financial schemes, are largely based only on processing the results from Energy Performance Certificates (EPCs) issued for participating buildings in different sectors. Whereas deemed savings for fiscal and financial schemes in France are supported by impact assessment through SCEGES modeling. Table 2 demonstrates the calculation methods adopted by MS countries to estimate savings ex-ante for selected alternative measures under evaluation.

For regulatory measures and standards, estimations are often based on deemed savings, where assumed percentage savings are adopted for energy uses not covered already by other policy measures (e.g. cases of UK and Greece). A "deemed savings" method is also reported for fiscal measures, since tax authorities do not usually require monitoring and reporting of energy savings.





**Table 2: Energy saving calculation methods**

Type of measure	Calculation method	Countries
Financial (e.g. subsidy-grant, loan)	<b>Deemed savings</b> , based on experiences from past years	Austria, Germany, France, Greece (direct investment programmes), Italy, Netherlands, UK
	<b>Scaled savings</b> based on program evaluations and expected future support volumes	Austria, Italy, Germany, Greece
Fiscal (tax deduction, increase)	<b>Deemed savings</b> /modeling based on experiences from past years	Italy, France, Netherlands
	<b>Scaled savings</b> /modeling using economic model with assumptions about price response and the number of behaviour and technological options adopted.	Austria, Sweden (use of long-run elasticities), UK (deemed savings modeling)
Energy Taxes		
Training & Education	<b>Deemed savings</b> based on specific assumptions	France, Greece, Sweden
Regulatory measures (e.g. standards)	<b>Deemed savings</b> based on specific assumptions	Greece, Netherlands, UK
Infrastructure roll-out (e.g. smart metering)	<b>Deemed savings</b> based on specific assumptions	Greece, UK (evidence are collected to test current assumptions)
Legislative	<b>Scaled savings</b> based on program evaluations	Greece
Voluntary Agreements	<b>Metered or Scaled savings</b> based on program evaluations and expected future support volumes	Netherlands, Sweden

For most MS the estimated savings assigned on alternative measures are based partly on assumptions, estimates and forward projections of savings measured in the past. At this point in Article 7 implementation, the most popular methods adopted by MS to calculate indicative savings for alternative measures, is the deemed calculation method. For the latter there is a greater risk of poor additionality when baselines do not adapt to technology development or when measures are not revised following the evaluation of the market. This approach should be usually complemented by on-site inspections and periodic monitoring.

References to the basics of the measurement methods were made within the notification reports, although insufficient information specifying the chosen baseline and methodology for the benchmark adopted was usually included. Finally little or no information was included on whether ex-post monitoring and evaluation of energy savings from alternative measures will be conducted in the future.

Overall, calculation and reporting approaches are extremely variable and there is an essential difficulty in determining the most appropriate calculation method of savings regarding many issues (e.g. double-counting, additionality), especially due to the variety of policy measures usually with a broad technology and sectoral scope.

As a general conclusion, there is not one best method of calculating savings since the issue at stake is about defining in detail the most appropriate method, accounting for a number of factors, including transaction costs, practicality, and risk of over-estimating savings. As an example, Croatia has an effective system to monitor, measure and verify energy savings.





Croatia is currently developing a centralized platform (SMIV) that will be used by all governmental bodies, companies that implement energy efficiency service contracts and bodies that co-finance energy efficiency measures. The savings achieved (in kWh, CO<sub>2</sub> and per sector) through the implementation of the energy efficiency measures from the National Energy Efficiency Action Plan (NEEAP) will be measured through the SMIV. Several MS have also opted for the centralized approach of measurements.

### 3.2 Barriers to these alternatives

The main challenges in the policy decision-making and implementation process of measures under Article 7 are summarized below as reported by each MS country under assessment.

- Lack of clear purpose of the measure,
- Unexpected changes/adaptations in policy design impacting policy consistency,
- High administrative burden due to necessary policy amendments to conform with Article 7 requirements,
- Insufficient fundability for end users, candidate owners, municipalities, operator and ESCOs and difficulty in access to finance in general,
- High public cost associated with fiscal measures,
- Uncertainty of financing related to the unfavorable economic climate (e.g. In Italy, in a period of high public debt and crisis, the reduction of tax revenues will bring the Government to hinder the development of the scheme or even close it),
- Lack of a clear monitoring system (especially lack of precision according to energy savings and lack of a control-audit system) which influences the quality and certainty of achieved energy savings,

- Technical constraints or lack of technical infrastructure (e.g. IT problems) leading to delays and budget deficit,
- Past energy efficiency market activity focused on low hanging-fruit (e.g. the rapid implementation of measures with short payback periods),
- High up-front costs combined with long payback periods impacting the short-run profitability of most measures.
- Lack of political will,
- Possibility of failure due to competition with other measures (i.e. policy interactions) or due to complexity and difficulty of the measure itself.
- Lack of integrated energy concepts focusing on overall energy efficiency, resulting in untapped energy saving potentials,
- Lack of skills (motivation, knowledge, understanding): Low technical capability of municipalities' and banks' technical staff and lack of awareness and motivation from public entities and households for participation.

In particular, lack of skills can refer to the technical staff of local public authorities or to participating entities (e.g. private companies, banks) as it has been reported by many MS. For instance, in Sweden the lack of knowledge refers to lack of qualified staff in the public sector since tasks have become especially demanding. In France building refurbishment professionals need appropriate training in order to deliver quality work leading to the expected energy savings. Finally both in France and the UK participating financial institutions have been reported to have difficulties in comprehending and assessing projects' relevance in terms of energy efficiency (e.g. In France free eco-loans are not actively promoted since banks are not equipped to properly examine eco-loans applications).







Co-funded by the Intelligent Energy Europe Programme of the European Union

This identified lack of skills across different sectors (i.e. public and private sector) is highly related to inefficiencies in the official verification and compliance regime (in the form of lack of skills' specification and verification quality standards), indicating an urgent prioritization over such actions from MS governments. To stimulate skills enhancement in the private market (i.e. construction and buildings sector), MS should clearly prescribe, and strengthen their quality standards established per each support measure, policy package or sector, both in terms of project design and professional qualifications. Strict project requirements in terms of eligible technologies may also address reported market failures such as low hanging fruits (in the sense of unnecessarily subsidized technologies that already have a large market share). As follows, building contractors, project managers and craftsmen themselves will need further education and training in order to meet new requirements

and standards. In addition, raising awareness-efforts, carried out by the professional organizations, must also be continued to other influential intermediaries – accountants and banks. To stimulate skills enhancement in the public sector, governments should continue their exertions to inform and train local authorities' staff about changing requirements and standards with regard to anticipated results in the energy efficiency and renewable energy market. Finally regular audit procedures (e.g. inspections) and protocols should be clearly described and established to frame a credible monitoring, verification, control and compliance regime. To do so MS would benefit from a more detailed support and guidance from the EC side, on the specifics of auditing and inspection procedures (i.e. in what form should these be established and what type of information should be checked).