ENERGY EFFICIENCY WATCH

FEEDBACK LOOP REPORT

Progress in energy efficiency policies in the EU Member States

Findings from the Energy Efficiency Watch 3 Project

2016

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

Executive Summary

The core objective of Energy Efficiency Watch 3 (EEW3) is to establish a constant feedback loop on the implementation of European and national energy efficiency policies and thus enable both compliance monitoring and mutual learning on effective policy making across the EU. The project team applied a mixed-method approach to assess energy efficiency policy developments in EU Member States. EEW3 analysed the progress made in the implementation of energy efficiency policies in European Member States since the publication of the second National Energy Efficiency Action Plans (NEEAPs) in 2011 by screening official documents, sought experts' knowledge via an EU-wide survey and has been creating new consultation platforms with a wide spectrum of stakeholders including parliamentarians, regions, cities and business stakeholders. Results are presented in Country Reports for each of the 28 Member States, the Expert Survey Report, 10 Case Studies presenting outstanding energy efficiency policies in Europe, the Key Policy Conclusions, the project summary report in brochure format and this Feedback Loop Report, which summarises the overall EEW3 portfolio.

One key activity of EEW3 was a screening of the NEEAPs of 2011 and 2014 and other relevant documents (e.g. communications by Member States on the implementation of important articles of the Energy Efficiency Directive) as well as the ODYSSEE-MURE database. Key findings can be summarised as follows:

- There are more new and improved than abandoned or weakened policies since 2011. This indicates a clear positive impact of EU policies, especially the Energy Efficiency Directive and the Energy Performance of Buildings Directive. However, it is unclear whether this improvement in policy implementation will be enough to achieve the energy efficiency or savings targets of Art. 7 and Art. 3 of the Energy Efficiency Directive.
- The analysis confirmed the well-known fact that Energy Efficiency Obligation schemes take time to implement and increase to levels required to meet the 1.5 % energy savings target per year of Art. 7.
- Alternative measures to meet the 1.5% target and in general, all policy implementation appear to suffer from a lack of funding and staff resources. The document analysis presents little evidence on what could be the reason for this. It may be that energy efficiency policy is still seen by many policy-makers as a burden "imposed by Brussels", instead of the investment that it actually is, yielding the benefits. It may also be that the debt crisis of the years since 2008 has affected budgets for energy efficiency policies in some Member States, and the financial stability pact may have had the same effect in others.

Another central element of the EEW3 project was an extensive survey on the implementation results of the second NEEAPs in the 28 Member States. The aim of the survey was to learn from stakeholders and experts how they see the progress of energy efficiency policies and their implementation. In total, more than 1,100 experts

from all 28 EU Member States completed questionnaires and interviews (3 experts were interviewed in each Member State).

As a part of the survey, questions were asked about the energy efficiency policy instruments mentioned in the Directive on Energy End-use Efficiency and Energy Services and the Energy Performance of Buildings Directive.

One aspect was the perception of the effectiveness of these instruments. Overall, energy efficiency requirements for new and renovated buildings and labelling of products are the instruments with the highest positive impact perceived. Between 87% and 78% of the experts agree that they are at least partly effective. On the other end of the spectrum, more than a third of the experts considers the inspection of heating and air-conditioning systems as not effective. This shows that some of the long established regulatory instruments in the building sector are seen as the most effective policy instruments.

Even though the overall effectiveness of energy efficiency policies is high, experts were also asked in which sector they see the most important gap in the energy efficiency policies in their respective country. On average across EU countries, transport ranks lowest (38%), followed by the residential sector with 21%. There are however significant differences across countries. By far the largest gap is found in the transport sector in Denmark and in Austria. In both countries, 73% see energy efficiency in transport as the most important policy gap. Also, large gaps in the residential sector are reported from Hungary (60%) and Bulgaria (54%). In a number of countries, the percentage for the residential sector as the weakest sector in energy efficiency policies has decreased.

When asked which policy measures the energy efficiency experts would like to see at EU level, the two most popular measures were “a large European energy efficiency fund (giving both grants and loans)” and “stricter minimum standards for buildings and appliances”.

To learn from the very effective policy instruments and to close the remaining gaps, EEW3 has identified 10 case studies of good practice examples of energy efficiency polices in Europe that have significantly contributed to energy savings, due to their proven policy practices and innovative approaches (see table below). They may provide inspiration for the development of new innovative and ambitious policies and may trigger the transfer of similar policies to other countries.

The EEW3 Case Studies of Good Practice Policies

Case study	'Sector'	Type of policy
The Energy Efficiency Obligation Scheme in Denmark	Governance framework	Energy efficiency obligation scheme
The Energy Manager Obligation and White Certificate Scheme in Italy	Governance framework AND industry	Energy efficiency obligation scheme AND Regulation
The Sustainable Public Procurement Programme in the Netherlands	Public sector	Public procurement
The Danish Building Code	Residential - Buildings	Minimum energy performance standards
The KfW Programme for energy efficiency in buildings in Germany	Residential - Buildings	Grants AND financing instruments
Energiesprong (Energy Leap) in the Netherlands	Residential - Buildings	Demonstration projects AND information
The Nordic Market Surveillance on Eco-Design and Energy Labelling Directive (Nordsyn)	Residential - Appliances	Minimum energy performance standards
The Slovak Energy Efficiency and Renewable Energy Finance Facility (SlovSEFF)	Industry, Tertiary, Agriculture AND Residential - Buildings	Economic incentives for investment
The Irish Large Industry Energy Network	Industry	Support for advice and audits
The Car Registration Tax in Latvia	Transport	Economic incentives

Within the EEW3 project, feedback from business stakeholders on EU energy efficiency policies and their impact on the business community was gathered in five workshops that took place in Denmark, Germany, Croatia, Italy and Poland. The specific recommendations from the business community can be summarised as follows:

- A harmonised market and long-term strategy across Europe should be created;
- The transposition of EU Directives into national legislation needs to be improved;
- Information at both EU and consumer level needs to be improved;
- Access to financial instruments should be facilitated and support for small and medium-sized actors increased.

In line with project findings, the EEW consortium provides key policy conclusions that include both general recommendations applying to all directives as well as specific recommendations for the imminent review of the four major EU directives on energy efficiency - EED, EPBD, Ecodesign and Energy Labelling Directives. The following general recommendations on how effective policies can be facilitated have been derived:

- Develop positive European and national narratives on energy efficiency: So far, EU directives have not been able to create a common understanding of the multiple benefits of energy efficiency for all EU Member States and the variety of their citizens, companies, and public authorities. Experience from various

Member States shows that the added value of energy efficiency needs to be explained and communicated by national governments in order to implement successful policies and create broad acceptance and subsequent political majorities in favour of energy efficiency.

- Better communication and higher effectiveness of energy efficiency policies: There is a need to put more focus to the translation of complex methodologies and terminologies into easily applicable and reliable, continuous implementation programmes. This should go in line with a joint and coherent analysis of potentials, technology roadmaps, transformation pathways and end-points, and scenarios between Member States and the different EU directives.
- Foster innovative business models: It is recommended that countries create favourable conditions and revise their policies, foster innovative energy-efficient services, enable the transition towards business models generating revenues from energy savings, and not from selling energy. In order to realise economies of scale on European level, national schemes should also be made accessible for service providers from other EU countries, e.g. by applying European tendering rules.
- Introduce binding and specific targets together with effective financial instruments: To define and measure the aimed effect of any policy, it is essential to have binding and specific targets in place. Therefore, policy measures mentioned in the NEEAPs should always be connected to a specific target, as a breakdown of a specific and binding national and EU targets for final and primary energy consumption.

Content

1 Background

1.1 The policy framework

Over the last 10 years, the importance of energy efficiency in European policy has steadily increased. Today, energy efficiency is a key area of the EU's political agenda. Policy makers are progressively recognising energy efficiency as a suitable means to address the triple challenge of economic recovery, ensuring energy security, and mitigating climate change.

The European Union is committed to saving 20% of its primary energy consumption by 2020 compared to a business-as-usual scenario. The EU's "Europe 2020 Strategy" for jobs and smart, sustainable and inclusive growth (COM(2010) 2020) includes energy efficiency among its headline targets. The European Council set an indicative target at the EU level of at least 27% for improving energy efficiency in 2030.

In line with this changed approach, the "Energy Union Package" (COM(2015) 80 final) shows a clear commitment to energy efficiency. It states the necessity to treat it as an energy source in its own right, which should even be given priority as the "First fuel", and the intention to ensure that energy efficiency and demand side response can compete on equal terms with generation capacity.

This increased recognition of energy efficiency policies resulted in a range of policies, most notably in the adoption of the following Directives:

- the Energy Efficiency Directive (2012/27/EU, EED)
- the Energy Performance of Buildings Directive (2010/31/EU, EPBD)
- the Ecodesign Directive (2009/125/EC, ED)
- the Energy Labelling Directive (2010/30/EU, ELD)

As a part of the implementation of the EED and its predecessor, the Energy Services Directive of 2006 (ESD), the Member States had to submit three National Energy Efficiency Action Plans (NEEAPs), scheduled for 2007, 2011 and 2014. NEEAPs set out a Member State's energy consumption and energy savings targets, planned energy efficiency measures, and the improvements individual EU countries expect to achieve with their measures. In addition to that, Member States must report the progress achieved towards their national energy efficiency targets on an annual basis.

1.2 The Energy Efficiency Watch Project

Starting in 2006, three consecutive Energy Efficiency Watch (EEW) projects accompanied this process.

The EEW facilitates the policy implementation process of EU energy efficiency policies and supports market transformation by collecting information on the implementation of energy efficiency policies and providing this information to a variety of stakeholders,

including European, national, regional, local policy makers and experts, businesses, and NGOs. Members of the European and national parliaments have been a focussed target group of the projects. EEW creates a feedback loop on the implementation of European and national energy efficiency policies and thus enables mutual learning on effective policy making across the EU. Further, it screens progress of national policies, looks into legislative documents, seeks experts' knowledge and creates new consultation platforms with a wide spectrum of stakeholders as mentioned above. Analysis of the NEEAPs has been a central element in the EEW projects.

The EEW is co-funded by the Intelligent Energy Europe programme and coordinated by Eufores. The current project EEW3 runs from August 2014 to August 2017. It directly builds upon its two predecessors EEW1 (September 2007 to February 2010) and EEW2 (September 2010 to August 2013). Detailed information about this project is available at www.energy-efficiency-watch.org.

1.3 The Feedback Loop Report

The Feedback Loop Report summarises the overall portfolio of reports released by the Energy Efficiency Watch 3, which includes:

- the 28 Country Reports (available in English and national languages), which analyse the progress of energy efficiency policies in each Member State
- the Expert Survey Report, which gathered input from over 1100 experts, reporting on levels of ambition and progress of efficiency policies in each Member State as seen by experts in each of them
- 10 Case Studies that present outstanding energy efficiency policies in Europe and offer inspiration to policy makers
- the Key Policy Conclusions, which condense the project outcomes and translate them into strategic policy conclusions
- the project summary report in brochure format: “How to make Europe Number 1 in Energy Efficiency”

The stand-alone reports are available for download at the EEW website at http://www.energy-efficiency-watch.org/index.php?id=90.

In addition, the Feedback Loop Report provides specific input from the business stakeholder consultation in 5 selected countries and feedback from the local and regional level gathered in several thematic workshops.

The Feedback Loop Report is structured as follows:

Based on the 28 Country Reports, chapter 2 summarises the findings of the document screening and analysis. It shows developments of energy efficiency policies between 2011 and 2014 in a cross-country overview for six sectors. Chapter 3 confronts the documents with the experts’ perspective on progress in energy efficiency policies in their countries since the second NEEAP as collected in the EEW survey. A summary of the input from the business community gathered at business stakeholder consultation

workshops in Denmark, Germany, Croatia, Italy and Poland is given in Chapter 4. Chapter 5 presents the feedback received from the local and regional level in several thematic workshops. Summaries of the 10 case studies of good-practice energy efficiency policy instruments that have significantly contributed to energy savings, due to their proven policy practices and innovative approaches, are provided in Chapter 6. Chapter 7 presents the key findings and recommendations for each EU Member State. The Feedback Loop report concludes with the Key Policy Conclusions of the EEW project, focussing on effective policy-making for energy efficiency. The Key Policy Conclusions are a synthesis of all project findings. They include general recommendations for improving the effectiveness of energy efficiency policies as well as specific recommendations for the imminent review of the four major EU directives on energy efficiency (EED, EPBD, Ecodesign Directive, Energy Labelling Directive).

2 The document screening and analysis: policy developments from 2011 to 2014

2.1 Content and methodological approach

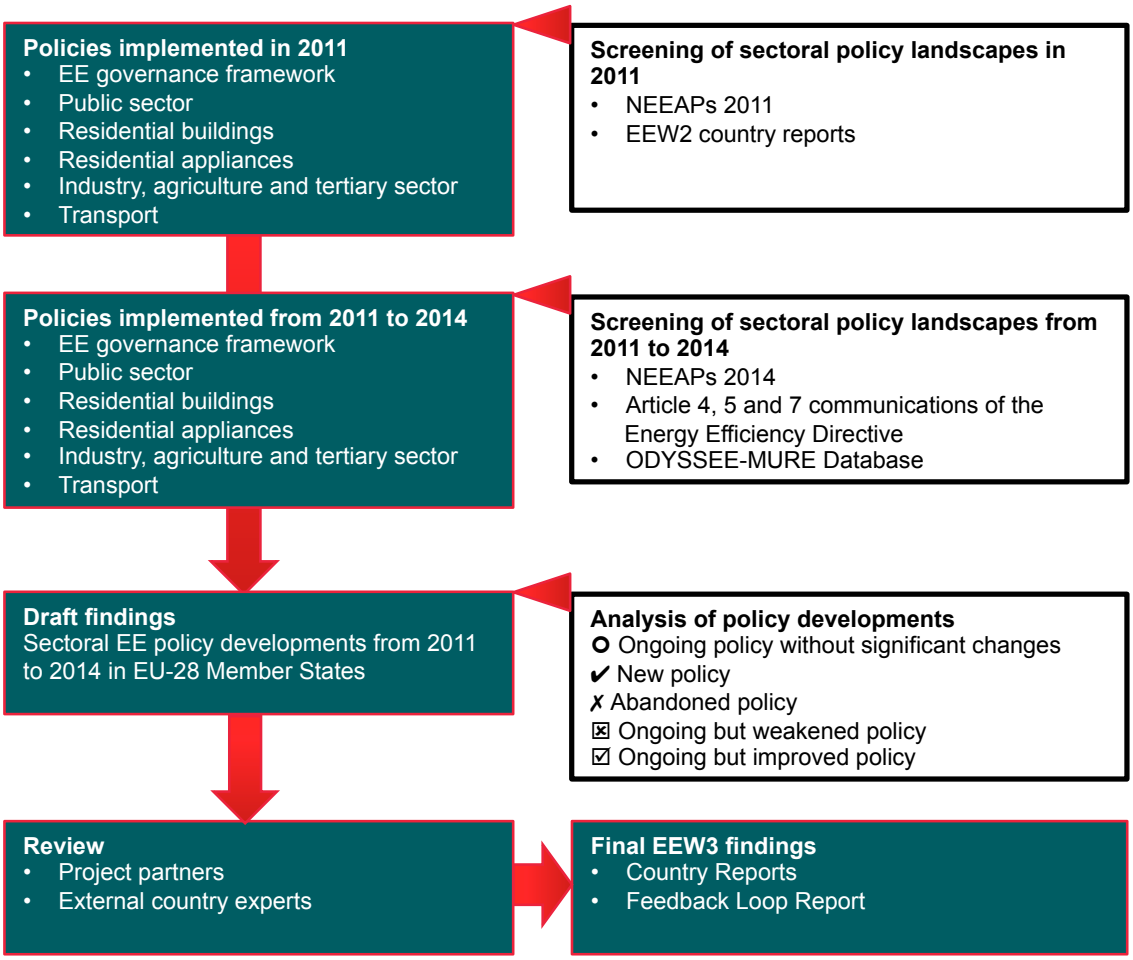
This chapter offers a summary of the findings of the document screening and analysis, which are presented in detail for each EU Member State in the country reports of the EEW3 Project.[1] Key points per Member State can also be found in chapter 7 of this report. The document screening and analysis took into account the second and third NEEAPs (published in 2011 and 2014, respectively) as well as the Member States' Article 4, 5 and 7 communications under the Energy Efficiency Directive. The ODYSSEE-MURE database was also a valuable source of information. Policy developments were screened and assessed in the following five sectors plus one overarching block:

- Energy efficiency governance framework
- Public sector
- Residential sector – buildings
- Residential sector – appliances
- Industry, tertiary sector, agriculture
- Transport sector

The following chart presents an overview of the document screening and analysis process.

[1] See http://www.energy-efficiency-watch.org/index.php?id=90.
This chapter on EEW3's document screening and analysis was prepared by the Wuppertal Institut.

Figure 1: EEW3 document screening and analysis



Each of these sectors/blocks entails a varying number of policy categories, which were used to classify the policies and initiatives of the Member State. The overarching Energy efficiency governance framework and each of the sectoral policies together form the sectoral policy packages, which were first found to be an effective combination of policies in the Energy Efficiency Watch 2 project and slightly developed further for EEW3 analysis. For instance, the public sector includes the four categories of (1) public sector strategy, (2) public procurement, (3) public buildings, and (4) R&D support, whereas the residential buildings sector consists of ten policy categories.

EEW3 focused its analysis on developments in policy implementation from the 2011 NEEAPs to the 2014 NEEAPs and documents. The overarching question was whether and to what extent the EED, particularly the Article 7 policy targets, but also the 2010 recast of the EPBD, and the implementation of the Ecodesign and Energy Labelling Directives, has enhanced policy implementation in the Member States, and if that would be enough to reach the targets, or if significant gaps and weaknesses remain.

Depending on the quality of information given in the official documents, it has been analysed whether policies have been

- newly established,
- significantly improved,
- ongoing without significant changes,
- significantly weakened, or
- abandoned.

The aim of this chapter is to summarise the key developments and trends of energy efficiency policies in the six above sectors according to official documents (based on the Member States' specific information as analysed in the country reports). For this purpose, country report findings – on whether policies are newly established, improved, ongoing, weakened or abandoned – were aggregated across EU Member States in order to provide an overview of EU-wide policy development trends.

Since the NEEAPs differ substantially from each other in terms of completeness, detail of information, structure and transparency, the quantitative data provided in this chapter are subject to the following restrictions and have to be interpreted with care:[2]

- The information provided in the NEEAPs is sometimes unclear or can be subject to interpretation regarding the status of a policy or initiative (e.g. whether it is planned, implemented, improved) affecting also the cross-country analysis provided in this chapter. If the status of policies was not entirely clear, the policies were allocated to the less advanced category (conservative approach).
- NEEAPs are often not comprehensive and information about certain policy categories is often missing. In particular, R&D supporting initiatives were hardly considered in most NEEAPs, not necessarily meaning that R&D support were not available in Member States. Policy instruments were however only accounted for in the analysis if explicitly mentioned in the NEEAPs.
- Level of detail: Some NEEAPs very elaborately discuss policies and initiatives in certain categories (e.g. information tools), while others depicted

[2] The following two examples also illustrate well why the number of policy measures in each category need to be interpreted with care and together with the qualitative findings:

1. Findings show that four new instruments have been realised in the public buildings category since 2011. This may either indicate (i) that four Member States have extended their public building policy framework (e.g. each Member State adding a single instrument) or (ii) that all of the four new instruments have been realised by one single Member State, while the other countries have not implemented new instruments or did not provide any information with respect to public buildings. Any other constellations are possible, too.
2. Of all EU Member States, only Country A and Country B present new activities in the public sector in their respective NEEAPs. However, the NEEAP of Country A is more concrete providing information about three individual energy efficiency projects to refurbish national, regional and municipal government buildings. The NEEAP of Country B is more abstract referring only to refurbishment activities in government buildings, in general. Hence, it is unclear whether the objectives of Country B are congruent with or go even beyond the multi-level objectives of Country A. In this case, and if no further information sources were available, four new policies would be counted.

developments on a much more aggregated level. In terms of numbers, these policies have been similarly accounted for and not weighted in the cross-country analysis.

- Croatia was not taken into account due to data limitations.[3]

Due to these limitations, it is essential to put findings into context. For this reason, diagrams visualising the findings in this chapter have to be interpreted together with qualitative paragraphs, while for more in-depth information we recommend to read the country reports as well.

This chapter includes six sub-chapters for the six energy efficiency 'sectors' (i.e., the five real sectors plus the overarching framework). Within the sub-chapters, the sectoral policy package with its policy categories is briefly presented. After that, main findings are provided showing the overall amount of policies that are new, improved, ongoing, weakened or abandoned in the 'sector' across all EU Member States. From this overarching perspective, the focus is shifted to the individual policy categories (e.g. public sector strategy or public procurement), showing the number of policies and initiatives in EU Member States and their development between 2011 and 2014. For each policy category, some selected countries are highlighted as examples – there may always be other Member States having implemented the category equally well. Each of the six sub-chapters closes with a presentation of selected countries that have implemented comprehensive policy packages with instruments in place in all of the sectoral policy categories. The chapter ends with overall concluding remarks and recommendations.

2.2 Overarching Energy Efficiency Governance Framework

An overall governance framework is essential to facilitating energy efficiency across sectors. It is also fundamental for organisation and funding of sectoral energy efficiency policies. An **effective energy efficiency policy package** should thus **combine a well-implemented governance framework with comprehensive sectoral policy packages**. In the EEW3 Project, eight policy types form the governance framework:

- Both overall **long-term energy efficiency targets and strategy** guide the detailed policy design and implementation. They also make governments accountable to society and other institutions with respect to energy efficiency objectives and provide investors and technology suppliers' confidence. Targets should be ambitious but feasible, guided by strategic planning, and can address different sectors or stakeholders. Stakeholders of the various sectors (e.g. industrial sector, construction sector) should be consulted in developing targets and strategies. Articles 3 and 7 of the EED have required Member States to adopt overall national energy efficiency targets for 2020 and to achieve 1.5% of

[3] Croatia joined the EU only in 2012 and did not submit a National Energy Efficiency Action Plan for 2011. Hence, it was not possible to undertake a comparative screening of the 2014 and 2011 NEEAP.

additional energy savings from policies and programmes each year from 2014 to 2020.

- **Involving non-governmental and market actors as well as sub-national authorities** in policy design and implementation includes, for instance, creating energy efficiency obligation schemes for energy companies or other forms of cooperation with them. Local and regional authorities, and energy service companies can also be important intermediate actors for reaching out to customers and suppliers of energy-efficient technologies or solutions. Through involving non-state actors, markets for energy efficiency can be developed and a broader energy efficiency coalition can be formed.

There are, in principle, two main ways of ensuring the capacity to implement and the funding for sectoral energy efficiency policies: either government agencies and funds for energy efficiency, or energy efficiency obligation schemes for energy companies.

- Establishing (and safeguarding long-term financing for) **energy agencies (or climate protection agencies)** with planning, implementing or monitoring authority is essential for implementing energy efficiency policies and programmes. Their concrete impact depends on the agencies' portfolio of assignments. They may have either more administrative functions in developing and monitoring legislation, or be more practical programme implementing agencies, e.g. implementing information campaigns or paying out financial incentives, or serve in both functions.
- **Energy efficiency funds** for overall coordination and funding of policies and measures can help to ensure that policy framework elements are continuously fine-tuned and funded.
- **Energy efficiency obligation schemes** for overall coordination and funding of programmes and measures according to Art. 7 of the EED require energy companies to achieve, e.g., annual energy savings of 1.5% of their sales to final consumers. In that case, the obligation scheme would completely meet a Member State's Art. 7 target, as is the case in a few Member States. The target could also be set at less than 1.5% per year, leaving the remainder for achievement through alternative measures. To achieve these targets, energy companies need to implement tools (e.g. hands-on individual advice and targeted financial incentives to save energy) supporting final consumers to reduce their energy demand. Two of our **Good Practice policy case studies** focus on energy efficiency obligation schemes: The energy efficiency obligation scheme in Denmark (Chapter 6.1) and the energy manager obligation and White Certificate scheme in Italy (Chapter 6.2).
- Energy services companies (ESCOs) can contribute to reducing final consumers' energy demand by implementing e.g. building-related energy efficiency investments. Energy cost reductions pay for the expenses. In this way, energy efficiency becomes a business and will be implemented by market actors rather than with support from policies and programmes. However,

ESCOs face several difficulties (e.g. low awareness, difficult contractual arrangements). Governments need to provide more **favourable framework conditions for energy services**, for instance through publishing model contracts, information platforms, or allowing ESCOs to also benefit from financial incentives for energy efficiency investments.

- **Energy taxation higher than EU minimum requirements** is a broad incentive for energy efficiency investments and intelligent energy use. In this way, it aims at avoiding excessive energy consumption. The EU's Emissions Trading Scheme is meant to provide additional incentives of this kind, but with the current low prices the value of the ETS in this respect is questionable.
- Institutionalised **R&D support** can encourage university and private sector research with respect to energy-efficient technologies or design methodologies and enhance existing market products in terms of better energy efficiency.

Effective policies implemented in each of the eight categories constitute a good governance framework as part of the overall policy package sustaining energy efficiency. However, energy efficiency obligations and the combination of government energy efficiency agencies and funds can be alternatives to each other.

2.2.1 Overall findings

Figure 2 below sketches the overall developments in the area of the overarching energy efficiency governance. It presents the number of policies in this area that have been newly set up, significantly improved, continued, significantly weakened or abandoned in the EU Member States between 2011 and 2014. In total, more than 300 policies or related initiatives were implemented (including new, improved, ongoing and weakened policy measures). 125 of these are new or improved, which is a share of 33%. 85 new measures had the total number increased by 28%. Only a minority of 13 policies was abandoned completely.

This seems a good indication that **the EED**, particularly Articles 3 and 7, but also Article 18 on energy services, **gave new impetus to energy efficiency policy implementation across the EU** in this area of targets, energy efficiency obligation schemes, energy efficiency funds, and promotion of energy services.

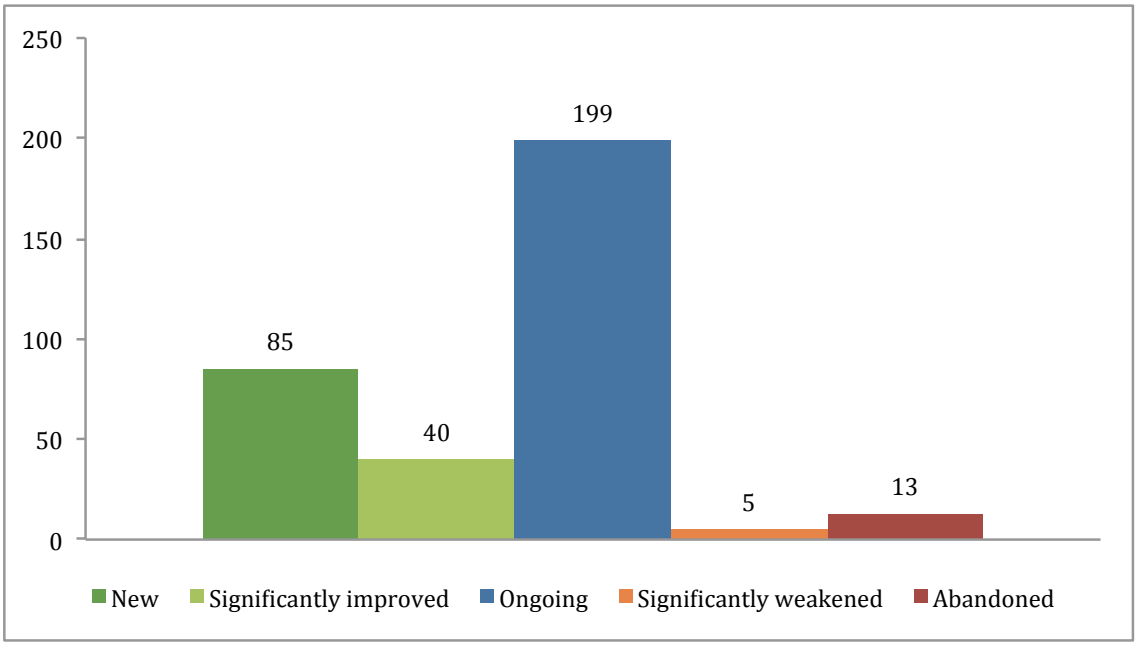
Findings can be briefly summarised as follows:

- Member States have established EED Art. 3 targets (and several long-term 2050, e.g. Germany, Finland, France[4]).
- Many new EEOs have been established or existing EEOs strengthened (Denmark, France, Italy), but also weakened (United Kingdom).
- Most energy or climate protection agencies were already in place in 2011.

[4] Whenever we mention Member States as examples, this does normally not mean they are the only examples for a kind of policy. There may be others with similar new, improved, ongoing, weakened, or abandoned policies.

- EE Funds have been improved in several countries (including Germany, Spain, France, Ireland, Italy, Slovakia, Slovenia), but also weakened in a few countries (Bulgaria, Denmark).
- The ESCO market has newly or increasingly been supported in several countries (such as Czech Republic, Denmark, Estonia, Greece, Italy, Portugal, (United Kingdom)).
- There has been little change on energy taxation (Portugal increased VAT: 6 to 23%).
- There is very little information on R&D available in the NEEAPs.

Figure 2: Policy developments in the Energy Efficiency Governance Framework of EU Member States



2.2.2 In-depth findings of developments in policy categories and instruments

The following Figures provide a more detailed account of developments in the eight policy categories belonging to the overarching governance framework.

Figure 3: Developments of policies and related activities in the sector Overarching Energy Efficiency Governance Framework (I)

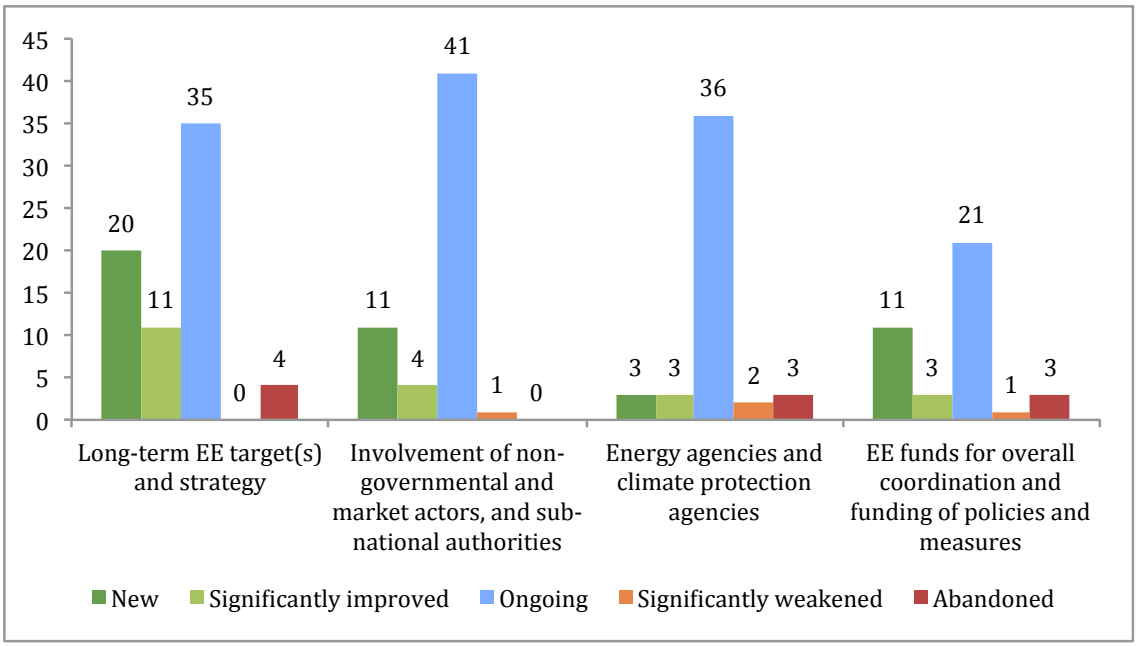
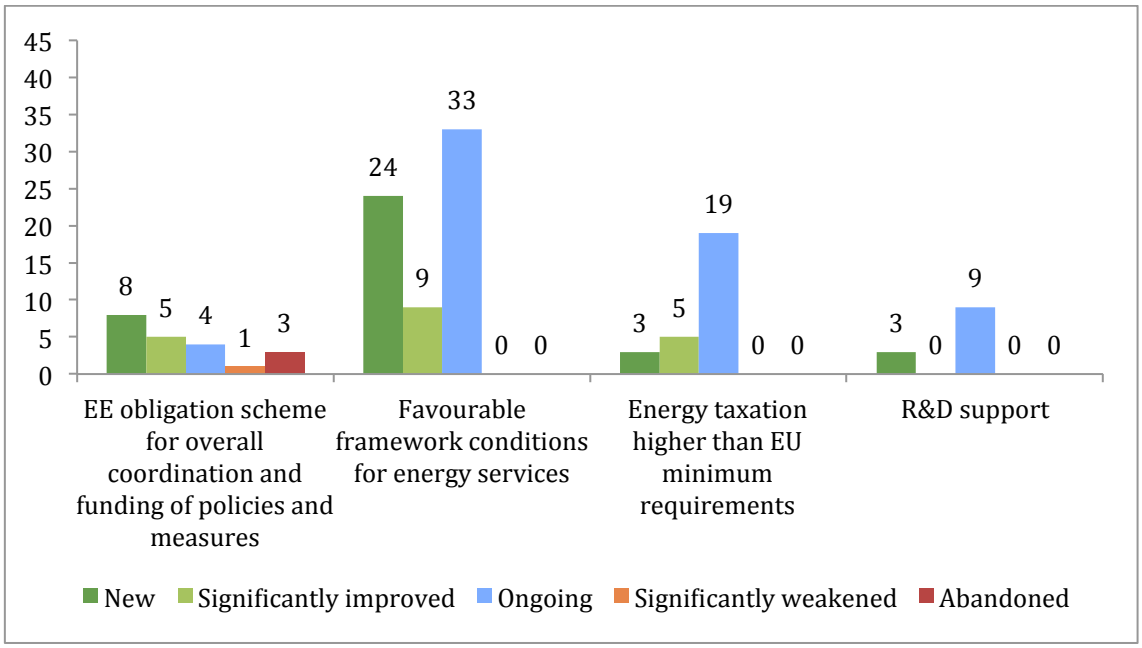


Figure 4: Developments of policies and related activities in the sector Overarching Energy Efficiency Governance Framework (II)



Energy Efficiency Watch analysis identified more than 60 **long-term energy efficiency targets and strategies** that are either ongoing, improved or newly set up in EU Member States between 2011 and 2014. Most of the countries have one to three of

these policies in place, based on EED Articles 3, 4, and 7 (including new, improved and ongoing ones). For instance, Germany continues to have an energy efficiency target in place, which was mentioned in the 2011 NEEAP already, and adds, among other things, the National Action Plan Energy Efficiency[5] that includes a catalogue of new policy instruments. Sweden carries on with its environment code containing general consideration rules to be observed in all activities and instruments. For Luxembourg, Slovenia and Italy only new policies are found. While quantitative findings point to a positive and stable trend in Romania with five policies ongoing, relatively negative opinions of country experts suggest that the implementation of policies should be improved. In contrast to all other EU Member States, information on Polish targets or strategies are missing; possibly, Poland does not have any policies or initiatives in this respect.

On **involving non-governmental and market actors, and sub-national authorities**, the EEW Project finds that this category has more policies or initiatives classified as ongoing compared to other categories. Only few policies have been improved, but 11 are newly set up. The highest number of instruments ongoing is found in Italy and Denmark. In the latter case, energy companies are involved via the energy saving obligation scheme, regional and local authorities participate in energy efficiency programmes and research institutions are involved through knowledge centres. Finland's NEEAP of 2011 states that educational systems, businesses and sub-national authorities are involved in facilitating energy efficiency, but the current NEEAP lacks information on whether this initiative is continued beyond 2014. In the UK, energy companies, schools as well as local authorities were involved as found in the British NEEAP of 2011, but current results suggest that reduced targets for energy efficiency obligations partly watered down the involvement of energy companies.

Each EU Member State has an **energy or climate protection agency in place** (ongoing, improved, new, weakened). The relatively low number of instruments improved (3), new (3) and weakened (2) suggests a relatively stable policy landscape. Finland, however, reduced its financial government support for regional energy agencies. Denmark closed the Energy Saving Trust, but the Danish Energy Agency continues to be responsible for the organisation and implementation of several energy efficiency measures.

Energy efficiency funds have been available in 2014 in 17 Member States (ongoing, improved, weakened). In Slovenia, the Eco-Fund provides low-interest loans and grants for EE investments, issues guarantees for investments in environmental protection, and financial, economic and technical consulting. Moreover, the Climate Change Fund finances amongst others research and development in energy efficiency and implementation of EE measures. The Energy Act newly stipulates that the Eco-Fund shall compile and implement a national-level programme to improve energy efficiency on the basis of which it allocates financial incentives for investments in EE

[5] The German National Action Plan Energy Efficiency (or NAPE) is not be confused with the NEEAP.

measures. Apart from that, the Act imposes fines for those entities that fail to achieve savings or fail to remit funds to the Eco Fund for implementation of the programme to increase energy efficiency. The Netherlands and Slovakia do not provide any information on whether they have any policy or initiative in this category in place, Denmark abolished the Energy Saving Trust. However, according to the Danish NEEAP, there is no need to set up an energy efficiency fund again, as the target according to Article 7 EED is now achieved through the energy efficiency obligation scheme.

Information on **energy efficiency obligation schemes** was relatively vague; in particular, some countries only referred to EEOs to be implemented in the future.[6] This finding may create concern on whether these countries will be able to meet the targets according to Art. 7 EED. Some countries also included information of sub-national levels reflected in those figures. For others, NEEAPs provided information that EEOs would be implemented without providing a concrete start date (see individual country reports for specific information). Spain and Ireland launched an obligation scheme with alternative measures according to Art. 7 EED. Slovenia and the UK are the only countries that weakened an existing obligation scheme; in Slovenia, obligated energy companies are no longer compensated through funds from the energy efficiency contribution but instead they have to use own funds. Also their obligation will be somewhat reduced, to rise again gradually up to 2020. In the UK, energy savings targets were drastically reduced. Please see the EEW3 country reports for more information.

Significant dynamics are noticed with respect to **favourable framework conditions for energy services**. While a high number of policies has been ongoing since 2011, nine more policies were improved while 24 instruments were newly developed. Several countries implemented two new instruments (e.g. Austria, Cyprus, Greece), others implemented more (Italy, Luxembourg, Spain). France appears to be particularly interested in improving framework conditions for ESCOs with four established polices and another new one. In France, energy services are promoted, for instance, through the White Certificate System, by allowing energy performance contracts in public procurement law, by energy performance model contracts and guides for the public sector as well as by a study conducting market research of energy and EE services. In some of the countries, where favourable instruments have not been implemented yet, plans exist to set up policies and accelerate the market for energy services, e.g. in Hungary, Malta or Latvia.

As stated above, energy taxation is an incentive for avoiding excessive energy consumption and, thus, promotes energy efficiency as a cross-sectoral instrument. France stands out positively, with two ongoing tax instruments, an improved one and a new one. Unfortunately, a relatively large number of countries does not provide any information on energy taxation In particular, Belgium, Bulgaria, Cyprus, Finland, Ireland,

[6] This was considered as „significantly improved“.

Lithuania and Romania do not have an **energy taxation higher than EU minimum requirements**.

Based on the information provided, national R&D support is provided in a minority of countries only. While Denmark had two instruments in place and a new one, 18 countries do not mention anything with respect to R&D support in their NEEAPs.

2.2.3 Examples of policy packages in selected Member States

From a policy package perspective, the countries that stand out are Denmark, Spain and the UK. These Member States have succeeded in realising policies in all of the eight categories of the energy efficiency governance framework. However, in particular with respect to the UK, it is worrying that Energy Efficiency Obligations have been watered down affecting several policy categories. Other remarkable examples are Austria, Germany, and Portugal. However, Austria, Germany and Portugal do not have an obligation scheme.

The following table provides an overview of the findings in the Spanish and British country reports. The changes in the policy design are illustrated with the following symbols:

- O means that the measure is ongoing without significant changes,
- ✔ shows that the policy is new,
- ☒ shows a policy that is ongoing but that was weakened significantly,
- ☑ presents a policy that is ongoing but that was improved significantly.

Abandoned measures are not included in this table.

Table 1: Examples of sectoral policy packages implemented in Denmark, Spain and the UK

Element of the policy package	Policies of the Overarching Energy Efficiency Governance Framework: development from 2011 to 2014		
	Denmark	**Spain**	**United Kingdom**
Long-term EE target(s) and strategy	O All the plans and targets are ongoing. The 2020 plan includes setting up a total of 350 MW of coastal wind turbines on 6 potential sites in Denmark and a resource plan and a conversion of the transport sector ☑ Danish Energy Agreement 2012 contains a wide range of initiatives with the aim to lead to energy savings of 12.6% by 2020 compared with 2006, and CO2 emissions in 2020 being 34% lower the they	☑ The indivative energy saving target by 2020 is consistent with the target of the Energy Efficiency Directive (EED), targets for individual sectors available ✔ Building renovation strategy with aim to stimulate investments in renovation O Law on Sustainable Economy introduces the structural reform needed to create conditions that favour sustainable economic development into	✔ Energy Efficiency Strategy as a first national strategy has been lauched, adressing e.g. overcoming of market barriers, consumer behavior, policy interaction (no targets given, one update since strategy has been launched)

	were in 1990. It was presented in the strategy document Our Energy, which is a follow-up of the Energy Strategy 2050 ✔ Strategy for energy renovation contains 14 initiatives which will promote the renovation of the building stock	the legal system (especially energy services)	
Involvement of non-governmental and market actors, and sub-national authorities	O Energy companies involved via saving obligation scheme O Regional and local authorities involved in energy efficiency programmes O Research institutions are involved through knowledge centres	O Cooperation between ministries, science institutes and universities are ongoing, regional governments push for some policies	☒ Energy efficiency obligations now have significantly reduced targets
Energy agencies and climate protection agencies	O The Agency still exists ✗ The Saving Trust was dissolved	O National Energy Agency IDAE still exists	O Agencies exist at local, regional and national level (Department of Energy and Climate Change (DECC) is the main national authority)
EE funds for overall coordination and funding of policies and measures	According to the third NEEAP, there is no need to set up an energy efficiency fund ✗ The Energy Saving Trust was dissolved No information on development regarding the Centre for Energy Savings and the Advisory Board on Energy Savings	✔ National Fund to support the obligation scheme and to promote the achievements of energy efficiency targets. Fund shall be supplied from the compensation resulting from annual savings, certificate fees or contrbutions made by obligation parties (Law 18/2014 was passed in October 2014; the executive order establishing the allocation of financial contributions to the fund was published in February 2015) ✔ The Investment Fund for Energy Diversification and Saving (FIDAE) is a 123 million JESSICA (Joint European Support for Sustainable Investment in City Areas) holding fund designed to finance urban projects relating to energy efficiency and the use of renewable energies	O No national energy efficiency fund, however financing mechanisms are in place (e.g. CCA, CRC Energy Efficiency Scheme, ECA)
EE obligation scheme for overall	☑ The obligation scheme is ongoing, and the energy saving targets were	✔ Spain decided to introduce an energy efficiency obligation	✔ Energy Company Obligation (ECO) introduced, but with much

coordination and funding of policies and measures	increased again. The latest agreement is from November 2012. Between 2015 and 2020, the annual target is set at 3.0%. Measures offered are consulting, financial assistance, advice etc.	scheme in combination with alternative measures. The National Energy Efficiency Fund is the translation of the energy efficiency obligation scheme. Energy companies have to pay 1,5% of their financial benefit to this fund for future energy saving measures. A White Certificate Scheme was not implemented until now	lower targets; Energy suppliers are obligated with targets to help households to reduce their carbon footprint, priority target group are low income households ☒ Energy efficiency obligations now have significantly reduced targets
Favourable framework conditions for energy services	O ESCO light is still being launched but the greatest use took place in 2011. The Danish Energy Agency focuses on advice and publishes lists of suppliers. The website serves as an entry point for final consumers ✔ Better Homes apparently newly introduced promoting the market for energy services ✔/O According to the third NEEAP, several ESCO models have been used in Danish municipalities; please note that municipalities have been teaming up with ESCOs since 2006	O The measures to promote energy services are aimed primary at the public sector: Law on Sustainable Economy forces public administrations to optimise energy consumption e.g. through energy service agreements ✔ Plan 2000 ESE promotes activities among public administrations and established energy consumer centres O Economic assistance is ongoing for autonomous and local administrations ☑ The documentation is ongoing, A database of energy services are managed by IDAE ✔ IDAE organises conferences, seminares, a website and info material to promote ESCOs ✔ Three business associations have been created to bringing together all energy service companies	O ECO as a supplier obligation in place ☑ List of energy service providers available at GOV.uk ☑ Requirements of EED Article 18 to be met, e.g. by publishing best practices guide to energy performance contracting ☑ RE:FIT scheme (only England) to deliver energy efficiency improvements to the public sector through Energy Service Contracts (has been upscaled, before only London covered) ☑ Quality labels have been simplified and number reduced
Energy taxation higher than EU minimum requirements	O The green taxes are ongoing	✔ Law No 15/2012 on fiscal measures on energy sustainability reform tax legislation to internalise external costs	O CCL still in place (until 2023; review in 2016)
R&D support	O Agreement on the implementation of the European Globalisation Fund (EGF) to maintain the investments in energy research, development and demonstration is ongoing O The Energy	O National Scientific Research, Development and Technological Innovation Plan is ongoing	Research institutions are e.g. the Energy Technologies Institute (ETI; public-private) and the UK Energy Research Centre (UKERC) are supported by public funds

Technology Development and Demonstration Programme is ongoing. An new board was appointed in 2011 ✔ **Fund of Innovation** includes three funds within research, technology and innovation	

2.3 Public Sector

In order to facilitate energy efficiency in the public sector, four policy categories should be combined.

- A **public sector strategy** provides strategic guidance on how to achieve energy efficiency and savings. It may include, among other things, energy efficiency targets and / or planned or implemented policy instruments providing information or advisory services to relevant staff. A roadmap helps to make the government more accountable with respect to energy efficiency targets, plans and actions. Depending on its exact outline, it promotes planning security for certain types of actors of the energy efficiency supply chain.
- Energy-efficient **public procurement** is, generally, supposed to accelerate the market share of highly energy-efficient products. The public sector will thus lead by example and also benefit from energy cost savings. Article 6 of the EED requires Member States to ensure that central governments purchase only products, services and buildings with high energy-efficiency performance. Chapter 6.3 presents the scheme for Sustainable Public Procurement in the Netherlands as a **case study of good practice**.
- The rationale of leading by example and energy cost savings also holds for **public buildings.** With respect to these, a wide variety of instruments exists (including energy performance contracting for public buildings or building energy assessment) for overcoming obstacles to nearly-zero-energy buildings in new or existing public buildings. According to Article 5 of the EED, Member States have to ensure that, as from 1 January 2014, 3% of the total floor area of central government-owned and -occupied heated or cooled buildings is renovated each year to meet the minimum energy performance requirements that each Member State has set in application of Article 4 of the Energy Performance of Buildings Directive.
- While energy-efficient public procurement and building instruments drive the market uptake, **R&D policies** aim at pushing new or better technologies on the market.

Effective policies implemented in each of the four categories constitute the sectoral policy package sustaining energy efficiency.

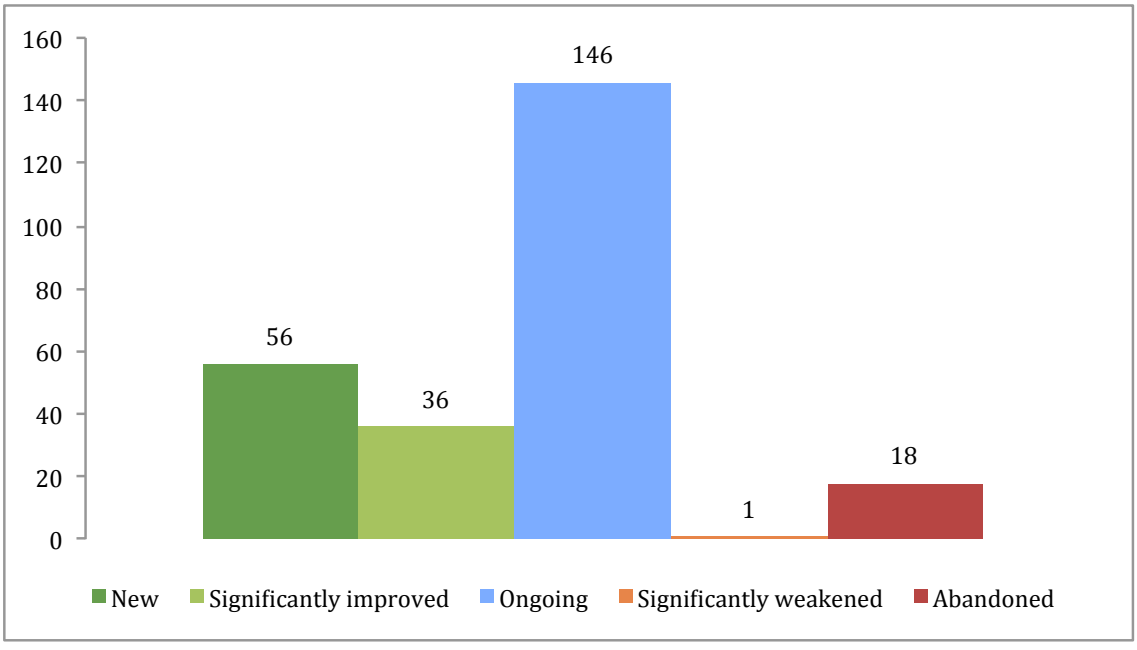
2.3.1 Overall findings

The Figure below illustrates the overall developments in the public buildings sector presenting the number of policies that have been newly set up, significantly improved, continued, significantly weakened or abandoned in the EU Member States between 2011 and 2014. Based on the findings gathered in the EEW3 country reports, more than 250 instruments were counted across the four policy categories. 92 of these are new or improved, which is a share of 35%. 56 new measures led to an increase in the total number of 17%. Generally, the public sector belongs to the **sectors best addressed through energy efficiency policie**s. With the many new measures, it is likely that **implementation of Articles 5 and 6** of the EED has had an effect on further improvement of the national energy efficiency policies in this sector.

Summarising in brief,

- The public sector was already best addressed with energy efficiency policies (lead by example, procurement, buildings) in 2011 (EEW2), and most of these programmes are ongoing or were slightly improved;
- Several countries, however, lack clear strategies and targets for the sector;
- Some new soft loan or grant schemes for municipalities have been implemented (Czech Republic, Denmark, Hungary, Italy, Poland) or stopped (Latvia).

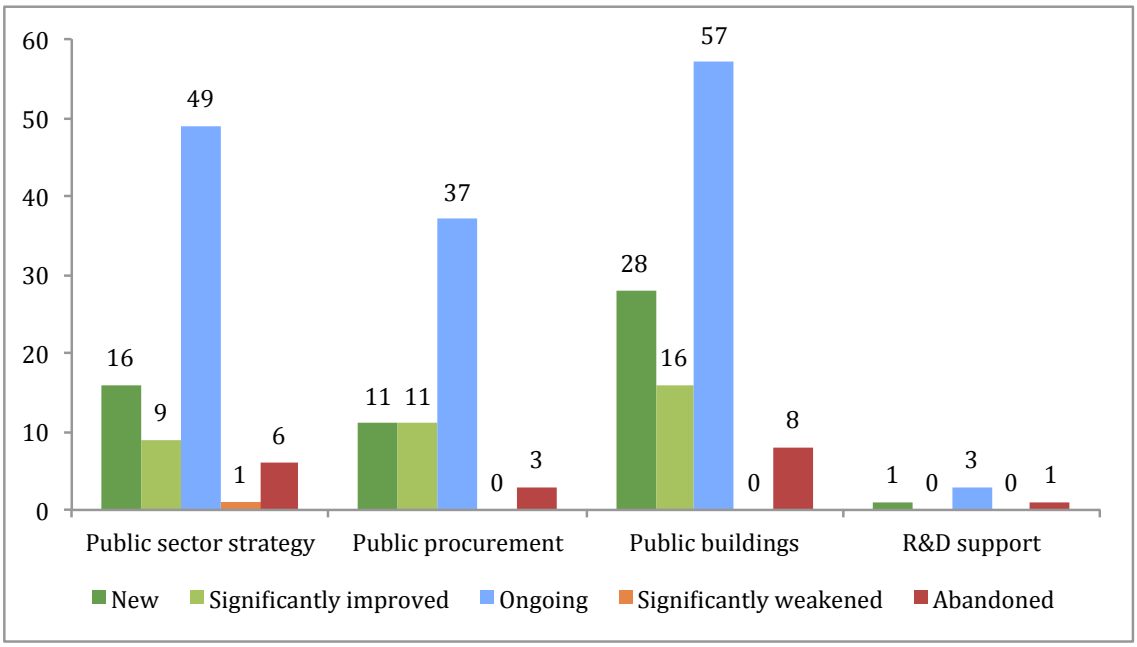
Figure 5: Developments of policies and related activities in the public sector of EU Member States



2.3.2 In-depth findings of developments in policy categories and instruments

The following figures provide a closer look at developments in the four policy categories important for the public sector.

Figure 6: Developments of policies and related activities in the Public Sector



For policies classified as **public sector strategy,** several countries have devoted increasing policy attention, like Portugal and Hungary. For Hungary, several improvements were made compared 2014. Sweden mentions four ongoing activities in its current NEEAP. For instance, all 290 Swedish local authorities and 21 councils have been granted aid for improving EE, and municipal energy advisors have to report on the nature and number of initiatives each month. Moreover, the Sustainable Municipalities Programme is ongoing with 37 municipalities participating in the project. On the other end of the policy spectrum appear to be the Czech Republic, Malta, and Poland, which do not provide information. Austria promotes the building renovation target of 3% annually for central government buildings according to Art. 5 EED, but like other countries does not have an overall strategy to achieve this goal yet.

Most of the initiatives in the area of **public procurement** remain ongoing, but some are also new and may have been a response to Art. 6 EED. In Austria, Slovenia, and the Netherlands, more than one improvement is counted. The Austrian National Action Plan to Promote Sustainable Public Procurement and the Federal Procurement Corporation remain ongoing activities, which are complemented by the enhanced Federal Energy Efficiency Act and regional programmes like the Lower Austrian Climate and Energy Programme. Estonia, Hungary and Luxembourg set up two new

public procurement instruments each, suggesting that the topic enjoys increasing attention in those countries.

In the public sector, most positive dynamics were found for **public building** policies. This has likely been stimulated by Art. 5 of the EED with the target for energy renovation of 3% annually for central government buildings. Poland has three ongoing policy-related activities and complemented its policy framework for public buildings with three additional instruments (e.g. the Energy Savings and Promotion of Renewable Energy Sources programme or the new financing scheme called LEMUR). Greece apparently recognised the role of the public buildings by launching six new initiatives such as the Bioclimatic Demonstration Schools programme. The case of Latvia also needs to be stressed as the Government had five policies ongoing including an information campaign and the new obligation to display energy performance certificates of public buildings. In Lithuania a programme for upgrading 28 libraries was completed as well as 500 projects supported by EU Structural Funds. The Lithuanian government set up an additional policy that is supposed to ensure that 3% of the floor area in government buildings is annually modernised, reflecting Art.5 of the EED and the role of the EU for national policy making. The Czech Republic, Denmark, Italy or Poland introduced new soft loans or grant schemes in order to facilitate energy efficiency in public buildings.

The negligible number of **R&D support** found in the NEEAPs and other documents analysed by the EEW Project may suggest that R&D in this sector is not a priority concern for the large majority of the EU Member States. Ireland and Slovakia represent notable examples as sector-specific R&D supporting instruments were already implemented in 2011 and continued to be effective throughout 2014. For instance, the Sustainable Energy Authority of Ireland introduced a research, development and demonstration programme. According to the Italian NEEAP of 2014, R&D support was newly implemented to conduct studies within the publicly funded programme Ricerca di Sistema Elettrico (RdS) to also promote EE in public buildings.

2.3.3 Examples of policy packages in selected Member States

From a policy package perspective, the three countries – the Netherlands, Italy and Slovakia – deserve attention. These Member States have succeeded in realising policies in all of the four categories in the public sector. The policy package of those three countries is summarised in the following table (based on the Country Reports).

The changes in the policy design are illustrated with the following symbols:

- O means that the measure is ongoing without significant changes,
- ✔ shows that the policy is new,
- ☒ shows a policy that is ongoing but that was weakened significantly,
- ☑ presents a policy that is ongoing but that was improved significantly.

Abandoned measures are not included in this table.

Table 2: Good examples of sectoral policy packages implemented in the Netherlands, Italy and Slovakia

Element of the policy package	Public sector policies: development from 2011 to 2014		
	Netherlands	**Italy**	**Slovakia**
Public sector strategy	☑ The Roadmap to a climate-neutral municipal and provincial organisation was developed to encourage municipal and provincial authorities to draw up a local climate agenda setting out energy efficiency objectives Public buildings as role model – From 2013 onwards, public buildings >500m2 should have an energy label, and starting in 2015, all public buildings >250m2 should have such label. For new public buildings it is agreed that the Energieprestatiecoeffiënt (energy performance coefficient) is more stringent than the standards. From 2018 onwards all new public buildings should be energy neutral	O Still no explicit strategy for the public sector but several policies provide funding or information and qualification to public authorities for the implementation of EE measures	☑ There still is no explicit public sector strategy but a range of measures and projects planned or implemented including an updated target in line with the EED and an investment strategy for public buildings.
Public procurement	☑ Municipalities are aiming for 100% sustainable purchasing in 2015 Provincial authorities, universities and other education institutions have set themselves the aim of purchasing wholly or partly sustainably ☑ The website of the Dutch Public Procurement Expertise Centre (PIANOo) publishes purchasing framework	☑ National action plan on "green public procurement" is ongoing and requirements have been strengthened. Energy minimum requirements (EMRs) have been added for energy services in buildings (lighting and heating/cooling) (voluntary basis) and the purchase of road vehicles	O There are plans to publish a methodology guide on the application of energy efficiency principles in public administration procurement
Public buildings	☑ Article 5 EED obliges member states to renovate 3% of the floor area of public buildings annually. However, the Netherlands has opted for an alternative approach	O Minimum environmental standards for public contracts in the building sector and requirements for efficient public lighting continue to be implemented	O/✔ Ongoing financial support for reducing the energy intensity of public buildings under different OPs between 2007 and 2013 and from 2014 on the OP Environmental Quality

	☑ A large portion of government buildings has been provided with an energy label. A list is available online	✔ Starting from 1 January 2019, new buildings owned or occupied by public authorities must be nZEB ✔ Thermal Account incentive scheme provides EUR 200 million for EE projects by public authorities in buildings and technical installations ✔ Financial support for projects by public authorities to increase the EE of buildings is provided through the newly established National Energy Efficiency Fund	☑ Energy Efficiency in Public Buildings pilot project is ongoing with increased budget until 2015 though restricted to funding energy audits ☒/☑ Change of grants provision through EkoFond to lower grant per project, but high simplification and large number of projects for mainly local and municipality level and step-by-step building renovation ☑ Stimulation of soft loan lending through MunSEFF is ongoing with increased funds O E^2 in state administration – SIEA training programme is ongoing O Requirement for municipalities with a population of more than 2500 to draw up a municipal thermal energy development strategy and periodically update it is still in place
R&D support	No information found in the screened documents	✔ Several studies within the publicly funded programme Ricerca di Sistema Elettrico (RdS) also promote EE in public buildings	O Continued support for research and development in energy savings

2.4 Residential Sector – Buildings

A policy package targeting all barriers and incentives of market actors in order to facilitate energy efficiency in the buildings sector will combine ten policy categories.

- **Minimum Energy Performance Standards** (MEPS) as part of national building codes are a reliable instrument to phase out the least energy-efficient building practices in new build and also in case of major renovation. Articles 4 to 7 of the EPBD require Member States to create and enforce MEPS (called minimum energy performance requirements in the EPBD) for new build and major renovation. In realising a reliable MEPS, surveillance and enforcement mechanisms have turned out to be crucial, for instance. As an **example of good practice**, chapter 6.4 presents the Danish Building Code.
- In addition to MEPS, **other regulations** are important too. For instance, good examples of other regulatory instruments are mandatory boiler and air

conditioner inspections, as required by Art. 14 to 16 EPBD, or the obligation to establish an energy management system in certain building types like multi-unit residential buildings. Making individual energy metering and billing mandatory, following Art. 9 to 11 EED, is another example of other regulations.

- Energy-efficient buildings and renovations generally have higher upfront costs, which can be a barrier to investors. **Grants or tax incentives** help to overcome this challenge and realise energy savings that will, e.g., count towards the savings targets according to Art. 7 EED. Such financial incentives can be applicable to new and existing buildings, and may be provided to whole-house measures or to single measures (e.g. adding heat recovery ventilation). In any case, they should stimulate only very energy-efficient 'deep' renovation and nearly-zero energy (nZEB) new buildings. Therefore, such schemes should contain a mechanism that higher energy performance enables higher grants or tax benefits. Grants and tax incentives for energy efficiency can provide economic stimulus to the building (component) industry, which is important in several EU Member States. An **EEW3 case study** highlights the KfW programmes in Germany (cf. chapter 6.5).
- Similarly to grants and tax incentives, **financing instruments** also tackle economic barriers. However, financing instruments also address lack of finance e.g. through loans, which can include a preferential element (e.g. extended payback time, low interest rates) and may be blended with grants. Financing instruments can also apply to various buildings types (e.g. new vs. existing, single/two-family vs. multi-unit), actors (e.g. private vs. institutional building owners), building measures (whole-house performance vs. single measures) and should include a mechanism that allows for better financing conditions if higher energy performance is realised. Two **EEW3 case studies** in chapter 6 present good practice for this type of instrument: the SlovSEFF – Slovak Energy Efficiency and Renewable Energy Finance Facitilty and the KfW programmes in Germany.
- **Energy performance certificates** (EPCs) are made mandatory through Art. 11 to 13 of the EPBD, in order to make the energy performance of buildings transparent for buyers and tenants, and thus to provide an incentive to improve the performance to builders and landlords/-ladies. The certificates include a variety of energy-related information about a building or building unit, such as annual or monthly energy consumption, an assessment of this consumption and recommendations on how to improve the performance through investments. Qualified actors should be in charge of issuing energy performance certificates. The EPBD also requires national authorities to mandate that energy performance certificates have to be shown to potential buyers or tenants.
- Building owners often lack information on how to improve the energy performance in building units owned. **Energy advice and audits** help to overcome this bottleneck, generally, by compiling data, assessing the performance, identifying energy leakages and providing recommendations to

improve the situation. Hence, such instruments are important prior to the investment decision. Like the issuance of energy performance certificates, it has to be safeguarded that energy advice and audits are carried out by qualified experts.

- **Other information tools for investors and users** can overcome the information deficit. This includes information campaigns, trade fairs and online services, for example. The quality of information ranges from providing information about possibilities to improve the energy building performance to showcasing demonstration buildings as good practice case studies to putting building owners in touch with energy advisors or contractors.
- In general, **demonstration projects** provide a space for integrating one or more best-available building components. They typically demonstrate to the public that energy-efficient buildings are feasible and remove misunderstandings (e.g. on mould formation). Another **EEW good practice case study**, The Energiesprong (Energy Leap) in the Netherlands, includes demonstration projects but also extensive information and networking (cf. chapter 6.6).
- As shown above, skilled experts are mandatory to realise an energy-efficient building stock. Therefore, **education and training for building professionals** is of cross-cutting importance for other policies (e.g. energy performance certificates).
- **R&D policies** aim at pushing new or better technologies on the market.

Effective policies implemented in each of the ten categories constitute a policy package sustaining energy efficiency in residential and non-residential buildings.

2.4.1 Overall findings

The Figure below shows the overall developments across the above ten policy categories in the residential buildings sector presenting the number of policies that have been newly set up, significantly improved, continued, significantly weakened or abandoned in the EU Member States between 2011 and 2014. Results are based on findings of the EEW3 country reports.

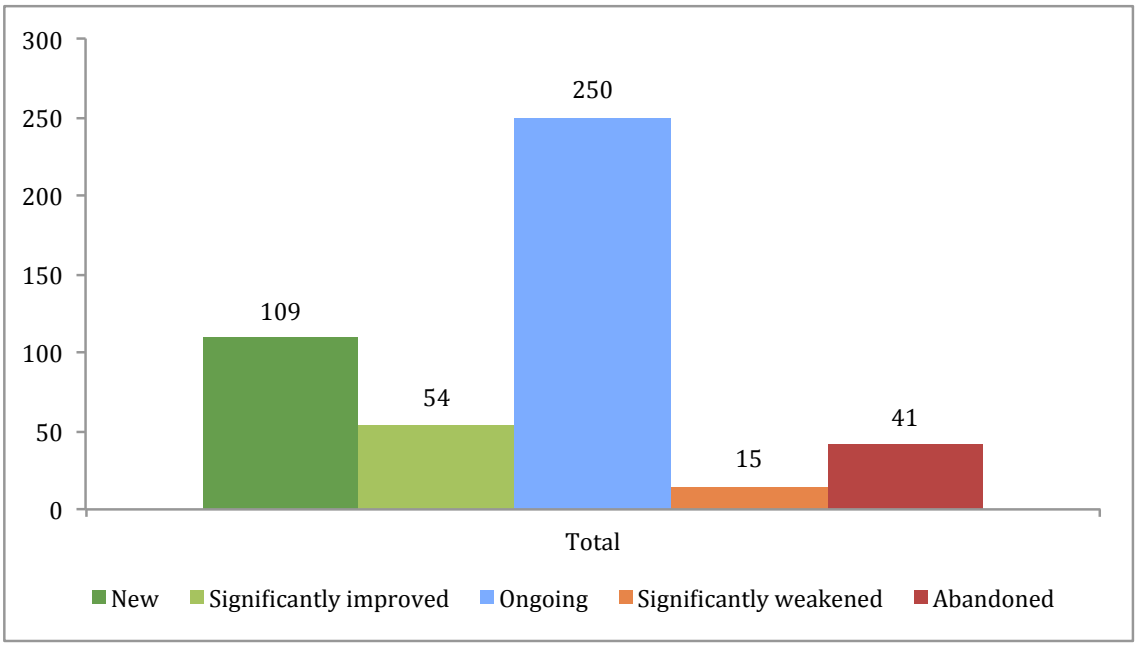
In this sector too, there are many more new or improved than weakened or abandoned policies presented in the 2014 documents compared to 2011. While the total number increased by 68 measures (16%), the 163 new or improved policies make up 37% of the 2014 total. Most likely, this is also an effect of the 2010 recast of the EPBD and the EED.

Findings can be briefly summarised as follows:

- MEPS/Building Codes and EPCs are in force in all Member States, but the energy performance levels required and their updating varies between EU countries.

- Loans and grants for energy efficiency in buildings have already been in place in many Member States in 2011. Some schemes were recently upgraded (e.g., Bulgaria, Germany, France, Hungary, Luxembourg, Slovakia, others were reduced e.g. due to the financial crisis (Spain, Ireland, Portugal).
- Audits and advice were improved in some Member States (Denmark, Lithuania, Malta) but reduced in others (Greece).
- Training programmes were improved in some Member States (Estonia, Spain, France, Greece), also with the support of the EU's BuildUp Skills initiative.

Figure 7: Developments of policies and related activities in the Residential Building Sector of EU Member States



2.4.2 In-depth findings of developments in policy categories and instruments

The following Figures provide a more detailed account of developments in the ten policy categories of the residential buildings sector.

Figure 8: Developments of policies and related activities in the Residential Buildings Sector (I)

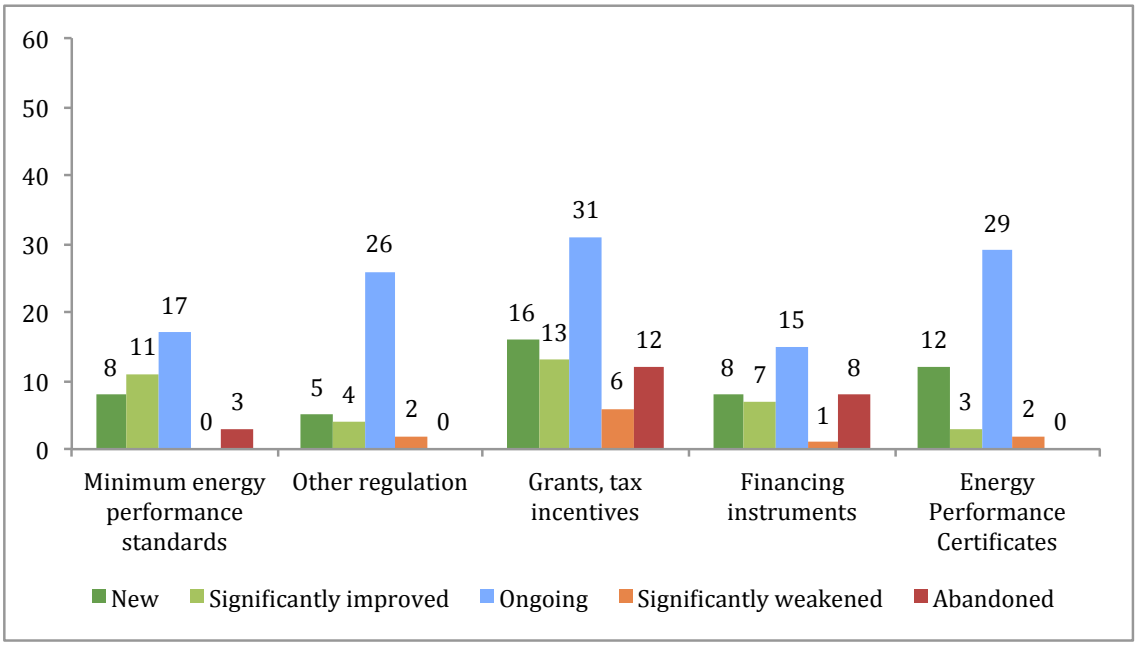
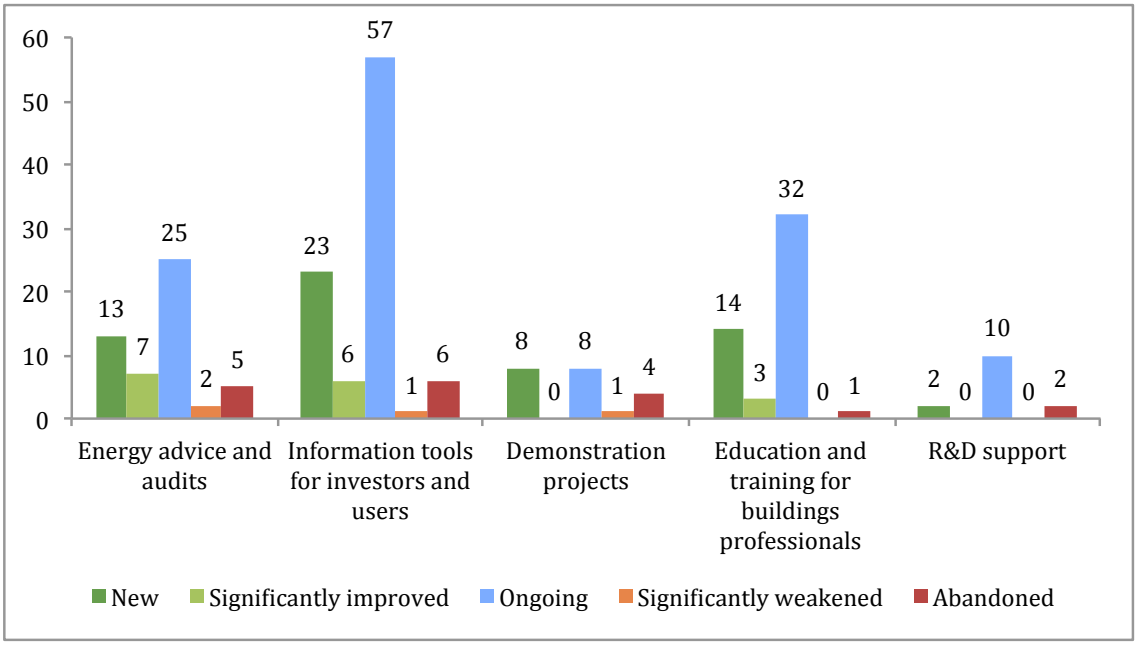


Figure 9: Developments of policies and related activities in the Residential Buildings Sector (II)



Minimum energy performance standards: While MEPS are generally in force in all Member States, the energy efficiency level and updating varies between EU countries. The majority of activities continued without significant changes, eleven improved substantially. France, for instance, strengthened thermal performance requirements of

new buildings, amended the Construction and Housing Code in order to favour the implementation of devices allowing the identification of heating cost and standards continue to be linked to a voluntary energy performance label and a financial support scheme. In other countries diametric dynamics can be perceived; for instance, the UK strengthened its MEPS like France, but abandoned the UK Code for Sustainable Homes.

Apart form MEPS, **other regulations** safeguard enhanced energy performance in buildings in Member States. In Slovenia, three ongoing activities were identified (e.g. division and calculation of heating costs in multi-dwellings and other buildings according to actual consumption according to the EED, mandatory regular inspection of boilers and air conditioning systems as required by the EPBD) as well as a new one (establishment of the option of dividing the benefits of energy efficiency activities between owners and tenants in multi-apartment buildings). In Luxembourg's NEEAP, information on other regulation is missing.

While MEPS and other regulations can be considered as relatively stable**, grants and tax incentives** are subject to major trends. While instruments are mostly ongoing, quite a large set of activities was newly introduced, improved or abandoned between 2011 and 2014. The Slovenian government upgraded the energy efficiency scheme for low-income households with free-of-charge advice including free-of-charge provision of low-cost energy efficiency items. Italy improved one of its existing schemes and introduced three new instruments for public and private parties. One of the instruments targets social housing. In particular, in Slovenia, Italy and France, but also in Germany or Greece, grants and tax schemes are perceived as important tools to realise higher energy performance. Other Member States have one or two grant or tax schemes available. Ireland, Spain and Portugal abandoned existing grants and tax incentive schemes. It seems likely that this is a consequence of the financial crisis and the resulting budget debt in these and other countries, as experts from many countries confirmed (cf. chapter 3).

As can be seen in the Figure above, the development of **financing instruments** for energy-efficient buildings is also dynamic, but at a more moderate level compared to grant or tax schemes. Moreover, policy improvements in this category are mainly due to developments in France and Germany. For instance, Germany strengthened energetic requirements in order to receive a preferential KfW loan and the budget for financing building renovation was upgraded, as well. For Belgium, three federal measures were continued as well as three regional schemes (two in the Brussels Region, one in the Wallonia Region).

Activities related to **energy performance certificates** were primarily continued, while several instruments were added. Most countries continue one or two policies with respect to energy performance certification in buildings. Only Cyprus does not provide any information in this respect. France requires the mandatory display of certificates at time of sale or renting out, the mandatory certification of auditors issuing certificates

and offers a voluntary energy endorsement label for buildings exceeding MEPS. Apart from that, a national and centralised database of certificates was developed and auditors are obliged to forward Energy Performance Diagnoses to the management authority that maintains the database.

Like energy performance certificates, activities classified as **energy advice and audits** were continued, 13 were newly developed and seven were improved. Member States, in general, have one to two instruments in place. Only for Ireland, information is not available. Poland offers capacity building for improving consultancy and auditing services. In Slovakia, a regulation defines the requirements as to the competence of independent experts and the procedure for providing their competence. In Germany, independent energy advice is available and subsidised for both residential buildings and SMEs. Greece abandoned financial support for energy advice and audits.

In the field of residential buildings, the most frequently used instrument among Member States are **information tools for investors and users**. Some countries have several information tools implemented (e.g. Belgium). Spain continues seven policies in this field such as a media campaign, an online platform, a citizen information service on energy efficiency as well as an e-learning platform. Noteworthy policy tools in Denmark are the website sparenergi.dk, which offers check lists, tools, guides and opportunities for subsidies, as well as the Better Homes scheme focussing on energy-efficient renovation with cooperations between home owners and financial institutions.

Compared to other policy tools, the EEW3 project did not identify many **demonstration projects** – either they are a less commonly used instrument or have not been considered as important to be included in the NEEAPs. For instance, the Czech Republic, Denmark, Finland, Greece, Hungary, Poland or Portugal do not provide information. Italy is in course of implementing some new demonstration projects, which focus on metering. Malta implemented a large-scale pilot to improve the energy efficiency in low-income housing; the project was completed in 2014.

In the field of **education and training for buildings professionals** several measures were added to the 35 instruments that were continued or improved (32 and 3, respectively). Ireland and Portugal did not provide sufficient information. In Greece, the project Build Up Skills – Greece, which aimed at preparing the necessary procedures for the training and qualification of the building sector workforce, was completed. Information continuing or complementing instruments was not provided. Luxembourg provides a positive example adding three new measures to four continuing ones. For instance, Luxembourg offers advanced training courses in the areas of energy efficiency under the Learning Factory initiative as well as a voluntary certification for energy advisors.

The screening of NEEAPs has found that information on **R&D supporting policies** is missing in the overwhelming majority of Member States (e.g. Austria, Belgium, Bulgaria, Finland, Greece, Netherlands, Poland). Notable exceptions are Sweden and France. Sweden continues four instruments like the E2B3, by which the Swedish energy

agency contributes to financing energy efficiency projects for RD&D. France provides support for R&D activities as well as funding of research related to Sustainable Cities and Buildings.

2.4.3 Examples of policy packages in selected Member States

From a policy package perspective, three countries – France, Italy and Slovakia – deserve attention. These Member States have succeeded in realising policies in all of the ten areas in the residential building sector. The policy package of those three countries is summarised in the following table. The changes in the policy design are illustrated with the following symbols:

- O means that the measure is ongoing without significant changes,
- ✔ shows that the policy is new,
- ☒ shows a policy that is ongoing but that was weakened significantly,
- ☑ presents a policy that is ongoing but that was improved significantly.

Abandoned measures are not included in this table.

Table 3: Good examples of sectoral policy packages implemented in France, Italy and Slovakia

Element of the policy package	**Residential building sector policies: development from 2011 to 2014**		
	France	**Italy**	**Slovakia**
Minimum Energy Performance Standards (MEPS)	☑ Strengthening of thermal performance requirements (MEPS) of new buildings (RT 2012 thermal regulations). ☑ Amendment of the Construction and Housing Code in order to favour the implementation of devices allowing the identification of heating cost. O Enforcement mechanism is still in place and standards continue to be linked to a voluntary energy performance label and a financial support scheme.	☑ Establishment of new and stricter minimum standards for buildings within transposition of the EPBD recast ✔ Starting from 1 January 2021 all new buildings must be nZEB	☑ Tightening of requirements for the energy performance of buildings and introduction of primary energy demand as global indicator
Other Regulation	O Requirement for larger buildings to perform a feasibility study regarding energy efficiency and renewables is still in place.	☑ Establishment of new rules concerning the operation, management, control, maintenance and inspection of heating, cooling and hot water systems in buildings	☒ Deferral of the requirement of hydraulic balancing of space heating and hot water distribution systems and insulation of hot water distribution systems for large buildings (Act No 69/2013 and 321/2014)

			☑ Reduction of intervals between periodic space heating system inspections to two years for biomass- or biogas-fired equipment with a rated capacity of more than 100 kW (Act No 314/2012) ✔ In buildings over 1,000m^2 with rented parts, separate energy consumption measurement is obligatory (Act No. 321/2014)
Grants, tax incentives	☑ Simplification of the CIDD tax credit scheme by maintaining only one applicable rate (30%). ☑ Tightening of conditions for 50 or 100% property tax exemption for new buildings exceeding mandatory energy performance levels. ☑ Modification of the "Live better" programme with regard to eligible target groups and grant size. ☒ Reduction on income tax for rental property investments has been decreased to 18% of the purchase price of the dwelling. O Reduced VAT rate of 5.5% for energy renovation work on dwellings older than 2 years. O Local authorities continue to offer incentives for energy renovation works.	☑ Extension and update of tax deduction scheme including a raise of the tax deduction rate to 65%, introduction of a system of penalties, a deadline for the 50% tax deduction on renovations, and an extension of the deduction to furnishings ✔ The Thermal Account allocates funds for a maximum yearly cumulative disbursement of EUR 200 million for energy efficiency projects by public authorities and EUR 700 million for projects by private parties ✔ Financial instrument similar to tax deduction scheme to renovate the hotel building stock also with regard to energy performance is being set up to become operational in October 2014 ✔ Funding for the energy upgrading of social housing ("Piano Casa"). EUR 400 million for energy renovations of dwellings plus EUR 67.9 million to renovate 2,300 dwellings for disadvantaged categories	O Provision of subsidies for building-society savings schemes is ongoing. ☒ Reduction of the overall amount of subsidies for the removal of systemic defects in blocks of flats between 2011 and 2013
Financing instruments	☑ Adjustment of the controlled interest-free eco-loan (PTZ+): technical requirements are not checked anymore by the bank, but validated by building professionals; achievement of the base rate depends on energy	✔ The National Workers' Compensation Authority (INAIL) will budget from 2014 to 2016 EUR 100 million per year for projects to improve the safety and energy efficiency of building	☑ Continued financial support via the SLOVSEFF programme (stage III) with significantly increased funding (factor 10) ☑ Provision of soft loans via the State Housing

	performance; possibility of extending the repayable period to 15 years for more extensive renovation works; information documents for homeowners and building professionals; extension of eligibility to property owner associations to facilitate the carrying out of work on co-owned properties; since 2012, it can be once again accumulated with the sustainable development tax credit. ☑ Adjustment of the Sustainable Development Account scheme (LDD): extension of eligibility for soft loans to dwellings; extension of tax cap to EUR 12,000. ☑ Extension of the social housing eco-loan system to 2020 and adjustment of eligibility criteria targeting the renovation of 70,000 social housing units/year.		Development Fund (SDHF) is ongoing with significantly increased budget combined with EU funds ✔/✗ Under the JESSICA project, the SHDF grants soft loans to applicants seeking aid for the renovation of multi-family buildings (ended in 2014).
Energy performance certificates (EPCs)	O Mandatory display of EPCs at time of sale or renting is ongoing. O Mandatory certification of auditors issuing EPCs is ongoing. O Voluntary energy endorsement label (HPE) for buildings exceeding MEPS is still in place. ✔ Creation of a national and centralized database of EPC maintained under ADEME responsibility. ✔ Obligation for auditors to forward Energy Performance Diagnoses to the ADEME to create a common database.	☑ Establishment of information requirements for the EPC including overall energy performance of the building, energy rating, minimum energy efficiency requirements under the law, CO_2 emissions, exported energy, recommendations for improving the building's energy efficiency and Information such as energy audits and financial incentives ✔ Introduction of requirement to enclose the EPC for a property with sales or letting agreements ✔ New national guidelines to be published establishing harmonisation of different regional schemes and a national Information System improving support and communication to local authorities and other stakeholders	O Requirements for certification of buildings upon their sale or lease, upon completion of a new building, or in cases where existing buildings undergo major renovation as well as mandatory registration of these certificates are still in place
Energy advice	O The network of local	O Ongoing	O No information on

and audits	energy advice centres continues to exist. O Requirement for co-owned dwellings primarily for residential use, consisting of 50 lots or more and equipped with a communal heating or cooling facility to undergo an energy audit is still in place. ☑ The SLIME progamme is ongoing and operation has been extended to further territories. Recruitment of energy renovation ambassadors is planned in order to help disadvantaged households. Announcement of creating a “renovation passport” in order to facilitate assistance to households during audit activities and energy saving projects. ☑ Regulation on energy audit proceedings in order to improve audit quality.	implementation of information campaigns on energy efficiency. O Promotion of energy managers is ongoing ✔ A tool for professionals to perform audits has been delivered within the Ricerca di Sistema programme and is publicly available on the ENEA website	developments regarding the plan to create a mandatory “building documentation package” O Obligation for industrial and agricultural undertakings to evaluate the energy intensity of production in the form of energy audits is ongoing ✔ Provision of financial resources to local government entities to engage in energy auditing
Information tools for investors and users	O Publicity campaigns are ongoing ☑ Amendment of the Construction and Housing Code to favour the implementation of devices allowing the identification of heating cost O Mandatory display of EPCs at time of sale or renting is ongoing. ☑ Eligibility to tax credits, the zero-interest-rate loans and for white certificates is conditional on the installation of the actions by professionals with the quality label RGE which provides a strong incentive for professionals to get the qualification. ✔ Launch of the “ j’éco-rénove, j’économise (by renovating, I save) ” awareness campaign in order to inform people of the existence of the information centres.	O The Website on energy efficiency is still in place. In addition there is a variety of other – to some extent also new – online, print and media campaigns to provide information on energy efficiency Information tools are in course of development at ENEA within EU-IEE-projects (e.g. REQUEST2ACTION 2014-2017) ☒ Smart gas meters deployment targets have been updated, setting them at 60% of households by end 2018, instead of 80% by 2017	O The SIEA continues to provide information on energy efficiency and funding opportunities for energy efficiency projects in households, businesses and the public sector by telephone, in writing (e-mail) or in person O The public information campaign run by SIEA as part of the national ENERGY FOR LIFE project is ongoing O Operation of the energy efficiency monitoring system to evaluate energy efficiency measures is ongoing ✔ Campaign to provide information on major renovation measures and the importance of energy performance certificates for buildings to owners and occupants of multi- and single-family buildings, including launch of a website

	✔ Obligation for energy providers to show on each bill the consumption history in kWh for the full previous year to enable comparison. ✔ Grand scale deployment of smart meters is announced (3 mio. by 2016, 35 mio. by 2020).		
Demonstration projects	O The Ecological Neighbourhoods (EcoQuartiers) project as well as the EcoCities initiative are ongoing. O Support of R&D activities under the PREBAT programmes is ongoing.	✔ Several pilot projects applying newly developed metering interface (Smart Info ®) to enable direct access to data from smart electricity meters for on-the-spot verification of benefits ✔ Definition of the procedure and selection criteria for piloting multi-service solutions in gas meters ✔ Approval of several projects for multi-services meters involving nine of Italian major cities and other smaller municipalities	☒/✗ Energy Efficiency in Public Buildings pilot project is ongoing until 2015 though restricted to funding energy audits
Education and training for building professionals	O The FEEBAT programme is ongoing ✔ Launch of the PRAXIBAT initiative, in which regional training platforms have been developed, where training is based on practical works (= platforms where the professionals can directly apply their new skills). O The energieBat programme is ongoing. O/☑ Renewal of the Charter for the commitment to guaranteeing environmental recognition (RGE), related to the qualifications necessary within the domain of the energy performance works for property owners and extension to intellectual services related to project management. O Established procedures for recognising the competences of building professionals are	O Confirmation of ENEA's mandate to provide support in the training and qualification of staff tasked with performing checks and inspections on heating/cooling systems as well as energy management ✔ Introduction of significant changes into the national framework for qualification/certification in the energy efficiency sector, namely definition of quality standards for professional profiles, certification of competences and formal and informal learning	O "Energy Auditor" training course on the performance of energy audits offered by SIEA is ongoing

R&D support	still in place.		
	○ Support of R&D activities under the PREBAT programmes is ongoing. ○ Funding of research related to Sustainable Cities and Buildings through ANR is ongoing.	✔ Several projects with Italy participating in EU 7FP and IEE projects (co-funded R&D)	○ Continued support for research and development in energy savings

2.5 Residential Sector – Appliances

In order to facilitate energy efficiency in the residential appliances sector, six policy categories have proven to be effective when complementing each other:

- **Minimum energy performance standards** (MEPS) are a regulatory instrument to initially phase out the least energy-efficient products but finally make the most energy-efficient products the standard. The EU's Ecodesign Directive is the framework for implementing such MEPS directly for the whole Internal Market of the 28 Member States. Market surveillance is key to enforce MEPS. Therefore, EEW3 has chosen the Nordic Market Surveillance as a **case study of good practice** for the appliances sector (cf. chapter 6.7).
- Energy-efficient appliances are, generally, more expensive, which is a barrier for consumers to purchase these appliances. **Economic incentives**, including subsidies, for only the very energy-efficient products help to overcome this barrier.
- Apart from economic barriers, the purchase of energy-efficient appliances can also be hindered by a lack of information of consumers. **Energy labels** address this challenge and help consumers to distinguish efficient products from inefficient ones. The EU Energy Label is mandatory and differentiates the degree of efficiency through a scaling system of generally A to G (in some cases A+++ to D or similar). In addition, the EU has an agreement with the USA for using the voluntary Energy Star label for certain types of electronic appliances.
- Similarly to labels, **other information tools** like websites with appliances databases or information campaigns facilitate the awareness of consumers regarding the multiple benefits of energy-efficient appliances and, hence, can increase the uptake of these technologies.
- Retail staff and other supply chain actors play an important role in promoting the uptake of energy-efficient appliances. For instance, retail staff informs final consumers on products, gives recommendations and, thus, ultimately, influences the purchasing behaviour. In this respect, **education courses and trainings** that aim to increase the capacity of these and other supply chain actors will help to market energy-efficient products.

- **R&D policies** seek to push new technologies on the market or enhance existing products (e.g. through new components or new ways of assemblage) towards higher efficiency.

Effective policies implemented in each of the six categories constitute a comprehensive policy package sustaining energy efficiency in the section Residential Appliances.

2.5.1 Overall findings

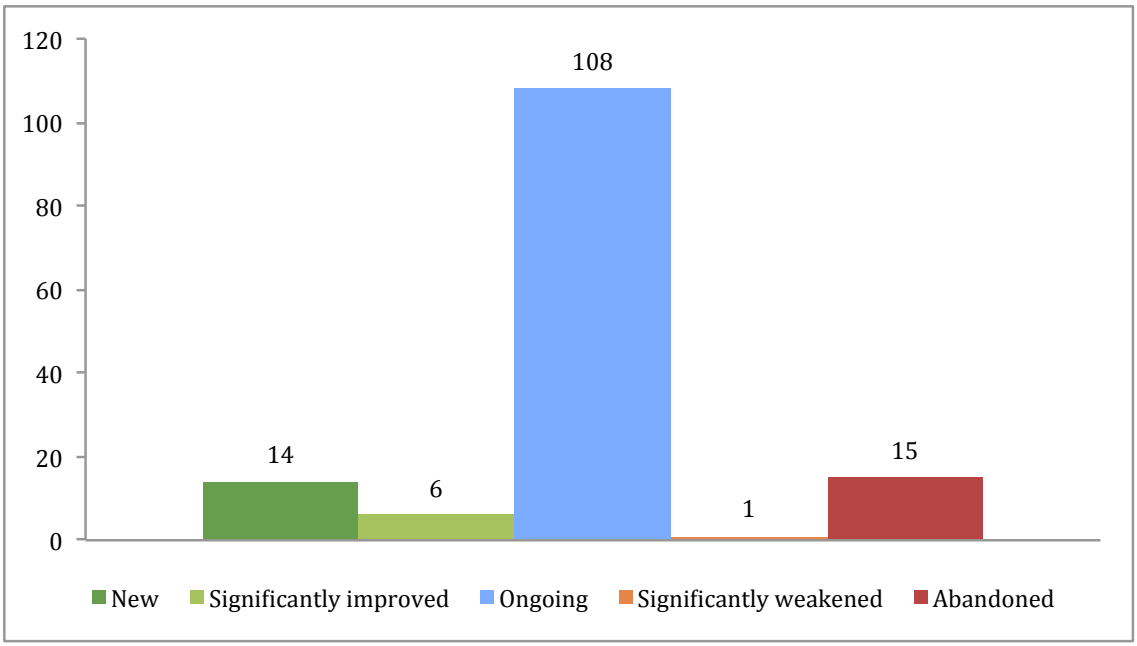
The Figure below shows the overall developments in the residential appliances sector presenting the number of policies that have been newly set up, significantly improved, continued, significantly weakened or abandoned in the EU Member States between 2011 and 2014. Based on the findings gathered in the EEW3 country reports, more than 100 policy related activities were spotted.

Although most of these are classified as 'ongoing', and relatively few new or improved measures were found, this does not indicate there was little change. It is true that most Member States rely on the two major direct EU policies, the Ecodesign and Labelling Directives, but under particularly the Ecodesign Directive, MEPS for many new types of appliances were created from 2011 to 2014, and others updated.

In brief, the status and development of Member State policies for energy efficiency in appliances are as follows:

- Most Member States appear to rely on EcoDesign and EU Energy labelling and do not mention any of the complementary policies that would make the EU Directives more effective, with the exception of consumer information; also, little information is available in the NEEAPs on market surveillance.
- There are only few financial incentive programmes for energy-efficient appliances (e.g. in France, Italy, Croatia, Slovenia).
- Many but not all Member States have info campaigns and databases (TopTen and others).
- There is very little mention of training for retail staff and other actors.

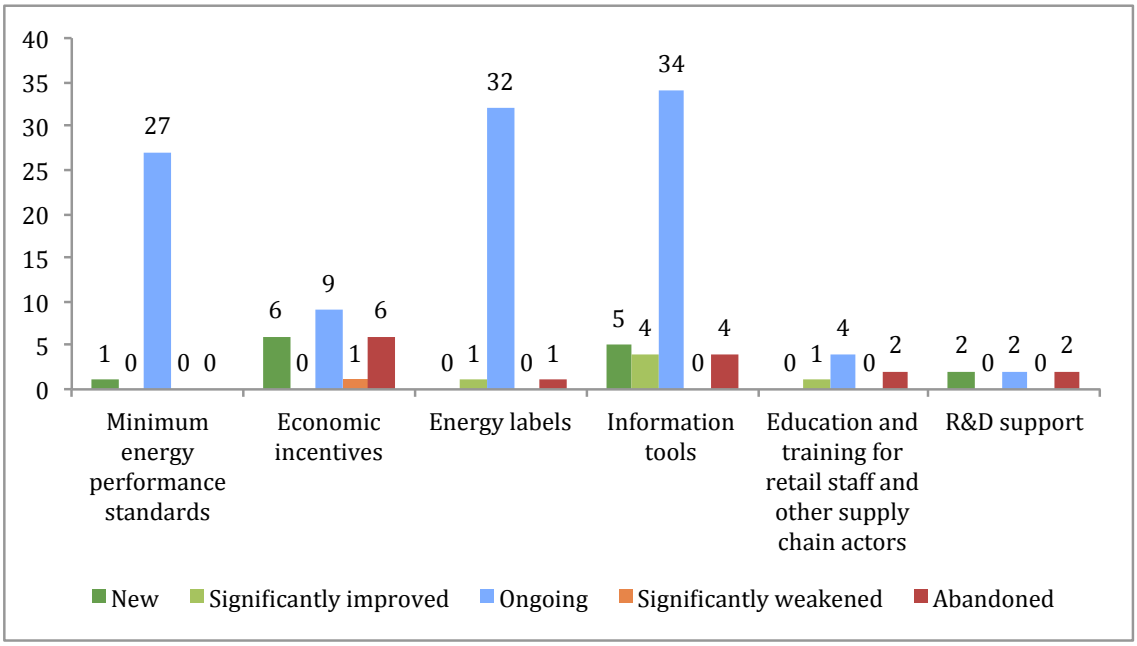
Figure 10: Developments of policies and related activities in the sector Residential Appliances of EU Member States



2.5.2 In-depth findings of developments in policy categories and instruments

The following Figures provide a more detailed picture of developments in the six policy categories in the sector Residential Appliances. Comparing the six categories, it appears to be interesting, that in particular, MEPS, labels, and information tools have become the centre of a stable policy design. This is clearly a result of the two EU directives.

Figure 11: Developments of policies and related activities in the Sector Residential Appliances



Based on the findings of the screening of NEEAPs, **minimum energy performance standards** for appliances belong to the most stable policy instruments with hardly any dynamic improvement or weakening. However, it should be noted that some countries like Slovenia are still about to fully implement the EU's Ecodesign Directive. Hence, the instrument was considered as "ongoing" in the analysis for Slovenia, but uncertainties remain. Moreover, Slovenia newly established an administrative surveillance and conformity assessment of products in relation to energy efficiency requirements by means of testing. In some other NEEAPs, information on the current status of implementation of the Ecodesign Directive is missing (e.g. Austria or France).

With respect to **economic incentives**, the Figure shows a relatively equal number of policies ongoing, newly established and abandoned. In Austria, a national programme facilitates energy-efficient lighting and a sub-national programme of the Austrian region of Burgenland offers grants for energy-efficient appliances. Likewise in Belgium a national instrument was newly established, while the Belgian NEEAP also refers to a sub-national scheme in the Brussels region. Again, a significant number of Member States do not provide information on economic incentive schemes, which may indicate they do not exist in these Member States, and that these Member States rely on Ecodesign and the EU Energy Label for energy efficiency in appliances. In countries like Cyprus or Portugal, economic incentive schemes were abandoned. Portugal established a taxation scheme disfavouring less efficient light bulbs; but the programme was discontinued.

Similarly to MEPS, the **EU Energy label** has become a stable part of the policy package for appliances in all Member States. However, some NEEAPs (e.g. Estonia

and Latvia) lack information on this issue. For the Czech Republic, the NEEAP analysis identified three positively ongoing measures: implementation of the EU Energy Labelling Directive is ongoing, inspections of energy labelling on appliances in shops and checks on information content of the labels by tests of appliances and implementation of the Energy Star Label is continued, as well. Germany improved its energy labelling policy through the National Top Runner Initiative, which includes a dialogue with various stakeholders on how to facilitate energy-efficient appliances. Hardly any information on market surveillance (and monitoring) is provided.

Information tools belong to the most popular policy instruments in the appliance sector. Among the EU Member States, around 30 instruments continued in 2014, four were improved, five were added and only three were abandoned. In Austria, France and Hungary, there were three instruments ongoing. Greece had two instruments ongoing, which were complemented by another one. For instance, the obligation of the public power corporation to provide information on energy-efficient appliances as well as the legal provision for energy suppliers to provide end-users with individual meters remain ongoing pillars in the Greek government's policy package for appliances.

With respect to **education and training for retail staff and other supply chain actors**, NEEAPs hardly offered any information. Based on the screening of NEEAPs, only four Member States have provided ongoing support for these actors; Germany can be considered a noteworthy example as energy saving checks, which include training of energy advisors consulting low-income households, were extended. Moreover, through the above mentioned National Top Runner Initiative the German government aims at increasing capacities of various supply chain actors to better market energy-efficient appliances. In Romania, seminars organised within an EU project (SELINA) were completed as stated in the NEEAP of 2014.

Hardly any information is provided in the NEEAPs on **R&D support** for energy-efficient appliances. In this respect, Slovakia refers to ongoing support for research and development in energy savings within the scope of this science and research programme. The French NEEAP of 2014 states that there are several R&D projects (e.g. "Smart Electric Lyon") about smart appliances and home automation, with both public and private support.

2.5.3 Examples of policy packages in selected Member States

Based on the NEEAP screening, there are no country examples that realised instruments in all of the six policy categories. Despite this finding, there are nevertheless some good examples for realising a policy package for the appliance sector that includes several policy instruments. Mostly, there is either a lack of information on R&D support (Germany) or on education and training support for supply chain actors (France).

The following table provides an overview of the findings in the French, German and Lithuanian country reports. The changes in the policy design are illustrated with the following symbols:

- O means that the measure is ongoing without significant changes,
- ✔ shows that the policy is new,
- ☒ shows a policy that is ongoing but that was weakened significantly,
- ☑ presents a policy that is ongoing but that was improved significantly.

Abandoned measures are not included in this table.

Table 4: Examples of sectoral policy packages implemented in France, Germany and Lithuania

Element of the policy package	Policies for appliances: development from 2011 to 2014		
	France	**Germany**	**Lithuania**
Minimum Energy Performance Standards (MEPS)	O Implementation of the Ecodesign Directive is ongoing.	O EU Ecodesign Directive is implemented, efforts to guarantee market surveillance are made	O No significant changes on the implementation of the Ecodesign Directive
Economic incentives	O Financial support for boiler replacements continues to be provided under the eco-loan scheme (PTZ) as well as the Tax Credit Scheme.	✔ Refrigerator exchange programme to help low-income households launched (if fridge exchanged by more energy-efficient appliances, a voucher for EUR 150 is given; up to 16,000 appliances within two years, savings: 5 million kWh per year).	No information in the screened documents
Energy labels	O Implementation of the Energy Labelling Directive is ongoing. O Implementation of the voluntary label (NF Environment label) is ongoing.	☑ National Top-Runner Initiative to improve effectiveness of EU energy labelling scheme	O No significant changes mentioned on the implementation of the Energy Labelling Directive
Information tools	O Web-based information tools are still in place. O Energy-saving awareness campaigns are ongoing. O Network of local energy advice centres is still in place.	☑ Energy saving check has been extended	O Information, educational and training activities still exist – in 2012 a creative competition was organised. Students were invited to the competition "Eco Christmas 2012" O Electric Magic, an educational initiative with aim at educating children about electricity (games, tests and other attractive means), is ongoing

Education and training for retail staff and other supply chain actors	No information found in the screened documents.	☑ Energy saving check has been extended	O Conferences, seminars, competitions and exhibitions organised to enhance the abilities of the country's specialists are ongoing
R&D support	✔ There are several R&D projects (e.g. "Smart Electric Lyon") about smart appliances and home automation, with both public and private support.	No information found in screened documents	No information in the screened document

2.6 Industry, Tertiary Sector, and Agriculture

Energy efficiency in industry, tertiary sector and agriculture can be facilitated through a variety of instruments. The EEW prototypical policy package for this sector includes the following categories of policies:

- **Minimum energy performance standards (MEPS) and other standards for equipment, production process or products** help to phase out very inefficient products, services or processes. MEPS under the EU's Ecodesign Directive are set so as to minimise lifecycle costs of the regulated equipment.
- **Targets on energy savings or energy efficiency for individual companies** are strategic elements to reduce energy consumption and costs. Energy savings and action targets can be mandatory or voluntary, with the latter usually settled in voluntary agreements with industry companies. They are of particular interest to conclude with energy-intensive companies. Moreover, targets and action plans help to establish and mainstream energy efficiency, create long-term awareness and continuously drive down energy consumption in companies in the longer run.
- The lack of information on energy consumption and savings potentials at the level of building parts, appliances, processes etc. is considered to be a major barrier towards saving energy on the company level. In particular, the amount of energy consumed through certain may be unknown. In addition, many companies lack priority for energy efficiency investments and / or staff capacity to identify and implement energy saving solutions. Obligations or financial support for **Energy management systems and other obligations** (e.g. mandatory energy audits as required for non-SMEs by Art. 8 EED) assist in ensuring that energy data is comprehensively and continuously collected (e.g. through an energy manager) in order to find ways to spot and remedy energy leakages. Energy management systems may include the appointment of an energy manager and software to monitor energy consumption.
- Even if solutions to save energy are identified, the expected shorter payback times or the financing situation of companies may hinder the realisation of respective investments. **Economic incentives for investment** help to overcome this

economic or financing barrier. Such support may be provided for best available technologies (or processes) only. An **EEW3 case study of good practice** in chapter 6 presents good practice for this type of instrument: the SlovSEFF – Slovak Energy Efficiency and Renewable Energy Finance Facitilty.

- For some industrial or commercial stakeholders, the upfront costs to have energy saving potentials identified through an energy advisor may be too high. Hence, **financial support for energy advice and audits** carried out by qualified energy consultants can overcome this bottleneck. A related instrument are energy efficiency networks in industry, supported by government. The Irish Large Industry Energy Network is presented as a **case study of good practice** in chapter 6.
- **Energy labelling** can refer to buildings, equipment or processes in order to increase market transparency. In this respect, company executives can easily identify opportunities to save energy.
- **R&D support** helps to bring new energy saving equipment or processes to the market.

Effective policies implemented in each of the seven categories constitute the policy package sustaining energy efficiency in industry, the tertiary sector, and agriculture.

2.6.1 Overall findings

The Figure below shows the overall developments in the industry, tertiary and agriculture sectors, presenting the number of policies that have been newly set up, significantly improved, continued, significantly weakened or abandoned in the EU Member States between 2011 and 2014. Based on findings gathered in the EEW3 country reports, more than 300 activities were counted across the seven policy categories.

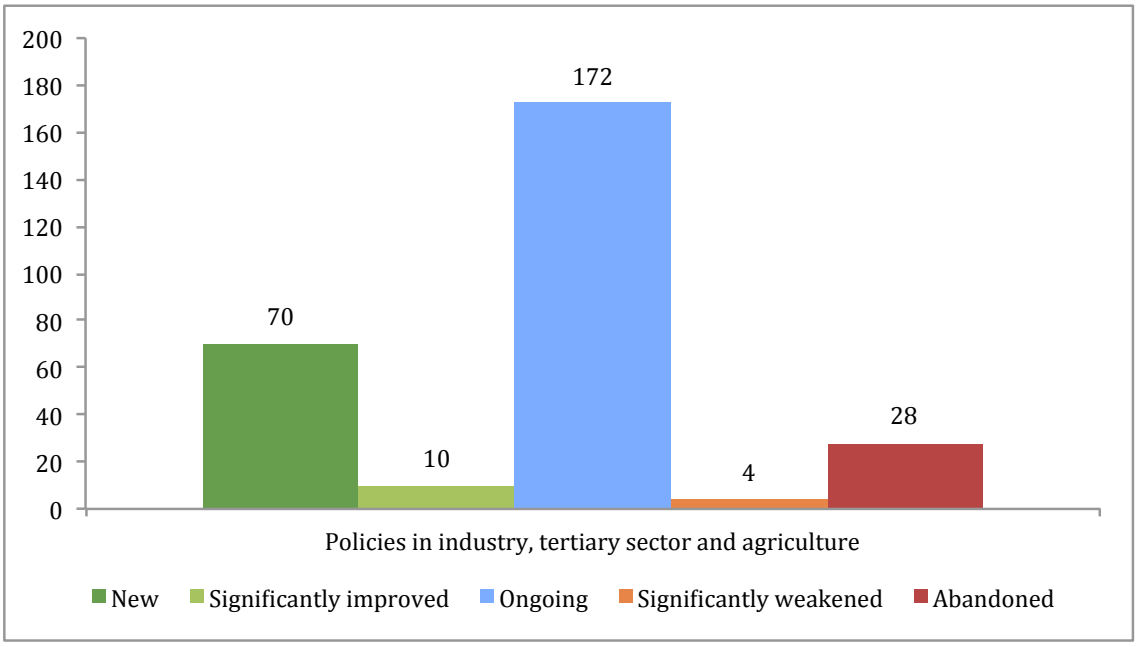
As in most of the five sectors, there are many more new or improved than weakened or abandoned policies presented in the 2014 documents compared to 2011. Their total number increased by 42 measures (16%), and the 80 new or improved policies are equivalent to 31% of the 2014 total. Most likely, this is also an effect of the EED, particularly articles 7 and 8.

Briefly summarising,

- Mandatory Audits for non-SMEs according to Art. 8 EED were transposed by most Member States; the Ecodesign and Labeling Directives show some effect in these sectors too.
- Many Member States have financial incentives or loans for energy audits, energy management, or energy efficiency investments (e.g., new schemes in Germany, Estonia, France, Greece, Poland), also under EEOs, so this is a likely impact of Art. 7 EED; other countries, however, have reduced their schemes (France, Ireland, Italy, Malta, Romania), possibly due to the financial and deficit crisis.

- Some voluntary agreements exist (Belgium, Estonia, Finland, Latvia, Lithuania, Netherlands, United Kingdom), some were abandoned (EEOs instead, as in Denmark; Sweden due to state aid rules).
- Few Member States implemented energy efficiency networks (Germany, Ireland) or energy manager obligations (Italy, Romania).

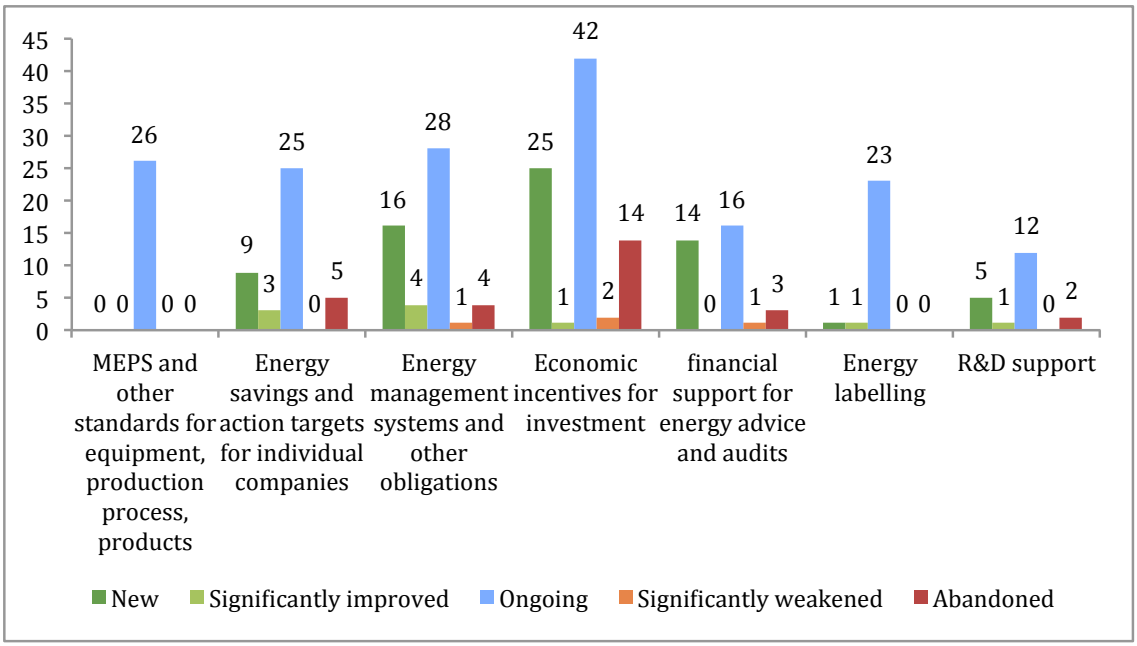
Figure 12: Developments of policies and related activities in the Industry, Tertiary Sector and Agriculture of EU Member States



2.6.2 In-depth findings of developments in policy categories and instruments

The following Figure provides a more detailed account of developments in the seven policy categories in Industry, the Tertiary Sector and Agriculture .

Figure 13: Developments of policies and related activities in the Sector Industry, Tertiary Sector and Agriculture



MEPS and other standards have been implemented in each Member State, most notably through Ecodesign. For 2011, Finland and Latvia referred to the Ecodesign Directive, but both do not provide any information on developments in the current NEEAPs of 2014. Given that the EU has continued the Ecodesign Directive throughout 2014 and beyond, two more ongoing policies could have been added in the Figure above. However, although the Ecodesign Directive is unchanged since 2011, the number of delegated acts on energy-related equipment and products also relevant for this sector has increased considerably.

With respect to **energy savings and action targets for individual companies**, including voluntary agreements, several countries have implemented more than two policies, while for a large share of Member States information was not available at all, or for 2014. In particular, for Cyprus, Finland, France, Greece, Ireland, Italy, Malta and Poland more comprehensive country information could have been included in the respective NEEAP. One of the positive examples is Portugal, with three ongoing and three new measures. For instance, the Management System of Intensive Energy Consumption (SGCIE) effective already in 2011 sets binding targets considering the potentials for individual facilities based on a mandatory audit. Moreover, energy intensive industries are obliged to elaborate and execute Energy Consumption Rationalisation Plans (PREn) establishing targets. By the end of the period, operators must reduce their energy consumption depending on their annual energy consumption. In addition, the Energy Efficiency Barometer will be continued, analysing the use of energy in production processes with a view to promote innovative solutions. The

Portuguese Government newly added the Programme Energy efficiency in the Agricultural Sector, which seeks to upgrade and renovate agricultural and forestry equipment. Sweden abandoned three policy instruments in this category, such as an efficiency programme offering voluntary agreements between the energy agency and individual companies in energy-intensive industries. This had to be discontinued because the deep rebates on the energy tax, which the Swedish government had offered for the agreements and the implementation of investments agreed, resulted in tax rates that were below the minimum rates required by the EU's energy taxation directive.

In Greece, Slovakia and UK as well as in Austria and France several instruments were classified as **energy management systems or other obligations**. In the UK, the Carbon Trust Standard as a voluntary certification scheme continues to be in place (one criteria is to have a energy management system). Moreover, the Government continues the CRC Energy Efficiency Scheme, which is a mandatory emissions trading scheme for large non-energy-intensive organisations (business and public sector) as well as the obligation to use advanced meters at small and medium-sized non-domestic sites (energy suppliers are responsible). Furthermore, the UK added two instruments: (1) the Energy Savings Opportunity Scheme (ESOS) implements Art. 8 ED and requires medium and large enterprises to conduct energy audits (industrial processes, buildings and transport covered) and (2) the mandatory GHG reporting scheme for quoted companies. The Government of France newly set up a regulation on running hours of different lighting installations in order to prevent a waste of energy and to reduce light pollution and mandatory energy audits every 4 years for all companies except SMEs. Most of the Member States included some form of instrument facilitating the implementation of energy management systems or other obligations, often in order to implement Art. 8 EED. In Finland, measures were still in the planning phase in 2014. For example, a law on an energy audit obligation for non-SME companies was drafted at the time of the NEEAP, companies with an energy management system will be exempt from mandatory audits (2014).

A stable set of policies is implemented in the EU Member States with respect to **economic incentives for investment**. Almost every Member State referred to implemented policies in this field. However, instruments also cover seven ongoing policies in Belgium including six regional tools. On the national level, the Dutch government implemented seven policy instruments like the Energy Investment Allowance, a fiscal tool offering the possibility of an additional allowance on taxable profit, the Green Investment and Finance programme covering green savings, investment and finance or the Investments in Energy Savings (IRE) offering companies in greenhouse cultivation a subsidy. While Finland's NEEAP of 2014 does not provide any information on economic incentives for investment in industry, tertiary sector or agriculture, which exacerbated the assessment of the category for the country, the analysis found that in Sweden, the only instrument applied in this field, a rebate on the energy tax, had to be abandoned due to violations with EU rules on state aid, as the

resulting tax rates that were below the minimum rates required by the EU's energy taxation directive (cf. above on the agreements that were coupled to the rebate).

In the policy category of financial support for **energy advice and audits**, 31 policies were identified (16 ongoing, 14 new, 1 weakened). Again, some countries do not offer relevant information (Cyprus, Czech Republic, Finland, Hungary, Slovenia). For all of the other Member States, financial support instruments for energy advice and audits were confirmed. Austrian activities cover an information (dissemination) platform, subsidies as well as regional policies. Mostly, countries only refer to a single policy instrument; Ireland, for example, established an SME programme with targeted support including advice and mentoring, training in energy management, and online energy management tools for participants.

Like MEPS, **energy labelling** is a relatively stable policy category in industry, tertiary sector and agriculture. This is mostly due to EU legislation. Between 2011 and 2014, only a single policy was newly introduced, which was in Portugal. In the South European country energy building certification is newly required. All large buildings above 100 m^2 of floor area have to display the certificate. Neither Austria nor Finland, Latvia or Sweden provide information on developments regarding energy labelling, highlighting the need for more information included in the NEEAPs.

The same is true for **R&D support** policies. Most countries do not offer any information in their NEEAPs. Three countries are noteworthy: Estonia, France and Denmark. The Estonian government established four policies: competence centres with a platform for cooperation between the enterprise sector and institutions for higher education, support for the involvement of innovation staff (the government supports companies in hiring R&D specialists for a period of 36 month), an innovation voucher through which SMEs gain better access to specialists as well as technology support in industrial enterprises. Prior to 2011, Denmark had already introduced both the Research Fund, which stimulates growth, employment and exports in Danish enterprises, as well as the Research Foundation, set up in 1944 by Aarhus University aiming to support scientific research at the University. However, Denmark discontinued Green Labs DK, a subsidy scheme for research, development and demonstration activities.

2.6.3 Examples of policy packages in selected Member States

From a policy package perspective and based on the screening of NEEAPs, three countries – Germany, Luxembourg and Ireland – provide good examples for facilitating energy efficiency in industry, tertiary sector and agriculture. Apart from that, Denmark or the UK also provide well-designed policy packages in this area, but Denmark abandoned / completed its economic incentives scheme because the energy companies now provide all energy efficiency assistance to industry under the energy efficiency obligations scheme, while the UK government abolished energy savings and action targets for individual companies. The policy packages of the three countries are

summarised in the following table. The changes in the policy design are illustrated with the following symbols:

- O means that the measure is ongoing without significant changes,
- ✔ shows that the policy is new,
- ☒ shows a policy that is ongoing but that was weakened significantly,
- ☑ presents a policy that is ongoing but that was improved significantly.

Abandoned measures are not included in this table.

Table 5: Good examples of sectoral policy packages in the Industry, Tertiariy Sector and Agriculture implemented in Germany, Luxembourg and Ireland

Element of the policy package	Policies in the Sector Industry, Tertiary Sector and Agriculture: development from 2011 to 2014		
	Germany	**Luxembourg**	**Ireland**
MEPS and other standards for equipment, production process, products	O Ecodesign Directive implemented	O Implementation of the EU Ecodesign Directive ongoing.	O Implementation of the Ecodesign Directive ongoing
Energy savings and action targets for individual companies	O Voluntary agreements with German industry sectoral associations; targets are specified	O Voluntary agreements with industry to improve energy efficiency in exchange for proportional exemption from electricity and gas taxes remain valid for the period 2011-2016.	No information found in the screened documents
Energy management systems and other obligations	✔ Grant scheme for energy management systems under the Energy Efficiency Fund available (incl. purchase of measuring equipment and software that is necessary for the introduction of such a system; mainly SME adressed) ✔ Peak equalisation / 'peak burden relief' rules for energy and electricity tax in manufacturing industries and rules for partial exemptions on the renewable energy levy introduced (companies can only claim relief on taxes or renewable energy levy, if they operate energy and environmental management	O Mandatory modernisation recommendations for improving the energy use of buildings and technical systems within the preparation of an energy performance certificate for existing non-residential buildings in case of intended alteration of the building or occupancy.	O Large industry energy network (LIEN), a voluntary network of companies working to maintain strong energy management and environmental practices, is ongoing O The Energy Agreement Programme (EAP), a subset of LIEN and supports major energy user to implement an energy management system, is ongoing No information on developments regarding the annual Sustainable Energy Award and the Energy MAP programme

	systems; for the renewable energy levy, they also have to document that they implemented cost-effective electricity end-use efficiency investments)		
Economic incentives for investment	✔ Promotion of high efficiency cross-cutting technologies in SMEs/promotion of energy-efficient and climate-friendly production processes implemented under the Energy Efficiency Fund ✔ New KfW Programme for renovation of commercial buildings implemented ✔ STEP up! competitive tendering programme to be introduced (end of 2015) to facilitate the take up of energy efficient technologies and appliances (also residential sector covered in principle) O Further programmes ongoing	O Investment aid for companies investing in energy efficiency measures is ongoing O Special amortizing for investments regarding environment protection and energy savings in enterprises	O The Accelerated Capital Allowance programme is ongoing. A cost-benefit analysis is currently underway to evaluate the impact and to form a basis for a post 2014 extension ☒ The Winter Peak Demand Reduction Scheme closed in 2013, but the Powersave programme, the STAR programme and the ToU are ongoing. Within the STAR programme, a programme is underway with demand side aggregators who bid for the reduction in peak load as required
Financial support for energy advice and audits	O KfW Special Fund for Energy Efficiency in SMEs in place ✔ SME initiative for energy transition launched in 2013 (e.g. information, training, dialogue)	✔ myenergy offers enterprises free basic advice over the phone and supports those participating in the voluntary agreements with monitoring and assists them in their first steps in the implementation of measures	O SME programme is ongoing: Participants receive targeted support including advice and mentoring, training in energy management and online energy management tools.
Energy labelling	☑ National Top-Runner Initiative planned to improve effectiveness of EU energy labelling scheme	O Implementation of the EU Energy Labelling Directive is ongoing	O EU Energy Labelling Directive is ongoing
R&D support	O Funds are available	✔ The Luxembourg Eco-Innovation Cluster network supports the various actors in the field of eco-technology, with the aim of creating and developing new, sustainable business opportunities - among other things by means of joint R&D and innovation projects	No information in the screened documents

2.7 Transport Sector

In the transport sector, energy efficiency can be facilitated through an effective combination of policies, which the EEW3 Project classified into five policy categories:

- **Planning instruments** provide strategic orientation including long(er)-term objectives and means on how to achieve these objectives. Planning instruments could target overall mobility issues but may also deal with particular sub-sectors or sub-systems, e.g. e-mobility/e-cars, bicycles, rail-based transport or freight. With new modes of fuelling cars (e.g. electricity, gas, hydrogen) requiring infrastructure, planning instruments can become an important element for providing orientation for R&D, private investment as well as local policy planning.
- **Regulatory instruments** range from driving restrictions in city centres, fuel standards to mandatory energy managers in companies of the transport sector. Most important are the EU's manufacturer vehicle fleet CO_2 emissions standards, which have so far mosly acted as fuel efficiency standards. The scope of regulatory policies is large and the individual instruments affect actors differently. Driving restrictions for particular areas affect users of all or of particular motorised vehicles, but as a consequence may also induce vehicle manufacturers towards a more energy-efficient production of vehicles.
- **Economic incentives** seek to overcome financial barriers that are often attached to more energy-efficient transportation. Purchases of energy-efficient cars can be examples of the objectives of such incentives. An increasing number of EU Member States is making car registration or ownership taxes dependent on fuel consumption. The car registration tax in Latvia is presented as an EEW3 **case study of good practice** in chapter 6.
- A lack of information on energy-efficient transportation may hinder the uptake of more advanced technologies or fuel-saving behaviour. Policies providing **information and advice** help to overcome this bottleneck.
- Institutionalised **R&D support** can encourage university and private sector research with respect to technologies or methodologies and enhance existing market products in terms of better energy efficiency.

Effective policies implemented in each of the five categories constitute a comprehensive policy package sustaining energy efficiency in transport.

2.7.1 Overall findings

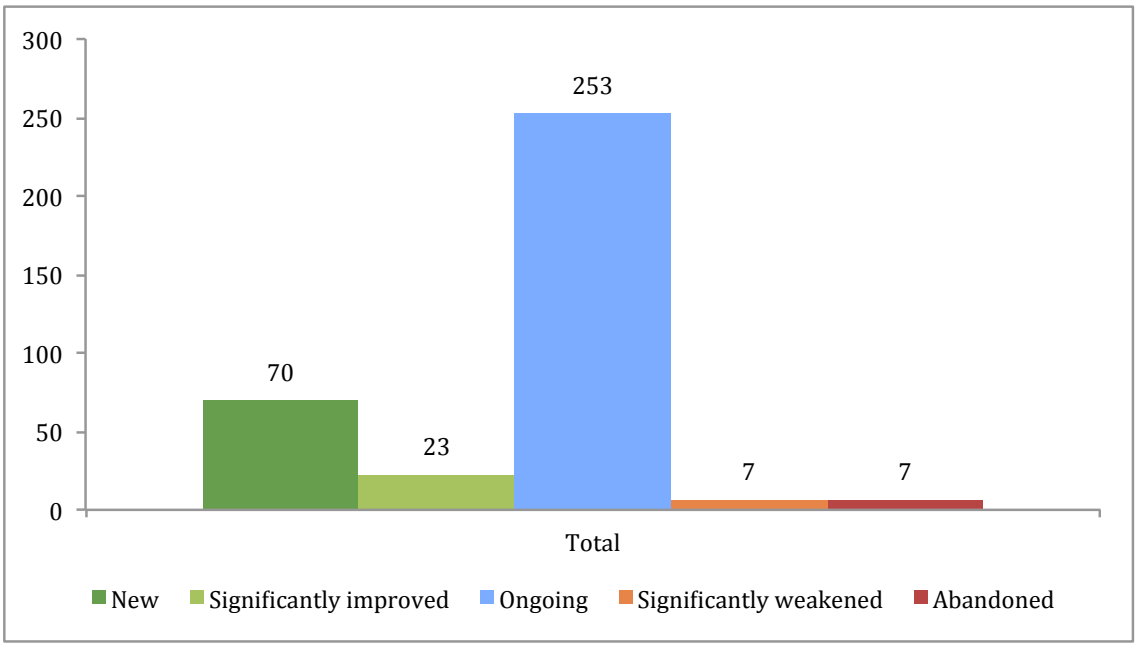
The Figure below shows the overall developments in the transport sector presenting the number of policies that have been newly set up, significantly improved, continued, significantly weakened or abandoned in the EU Member States between 2011 and 2014. Based on findings gathered in the EEW3 country reports, more than 300 activities were counted across the five policy categories. Despite this number of measures and related initiatives, the transport sector was considered to be one of the

weakest sectoral policy frameworks, mostly because relatively few changes or improvements took place – the number of measures has grown by only 63 (22%) since 2011 in this sector, and the 93 new or improved measures are only 25% of the total. In addition, the effectiveness of policies is less clear than in other sectors.

Aa a brief summary,

- The transport sector was considered the weakest sectoral policy in 2011 (EEW2 analysis).
- Relatively few changes happened between 2011 and 2014.
- Promising policies are vehicle taxes based on emissions (Belgium, Cyprus), road pricing (Belgium), support for also for modal shift; including transport in EEOs in France; Sustainable Urban Mobility Plans (many countries).

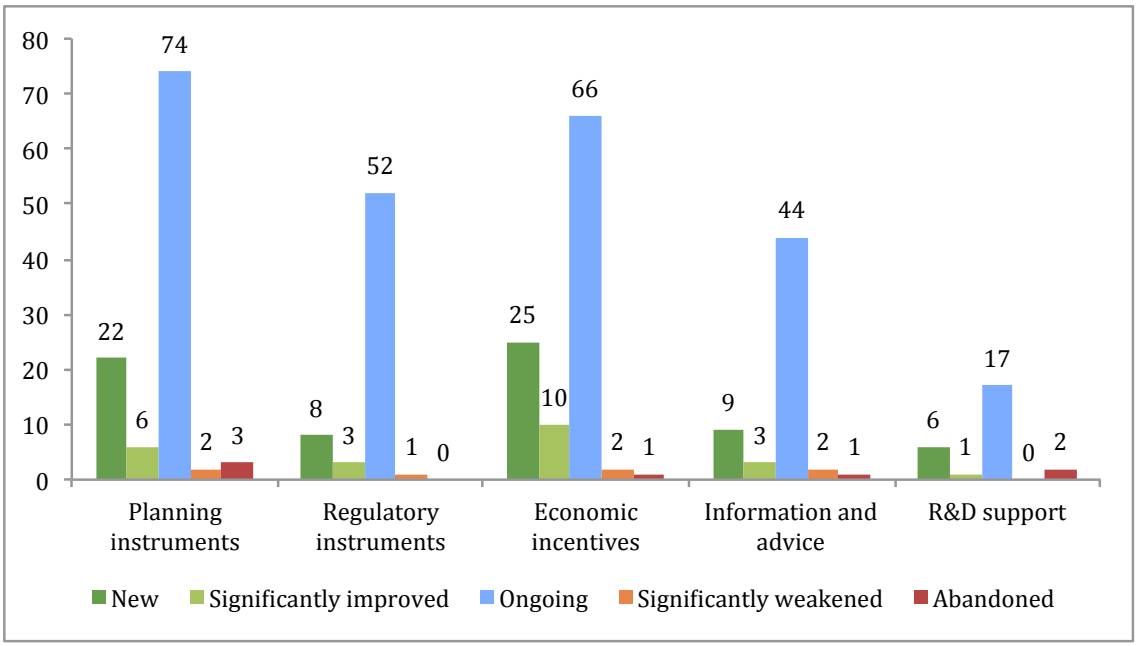
Figure 14: Developments of policies and related activities in the transport sector of EU Member States



2.7.2 In-depth findings of developments in policy categories and instruments

The following Figures provide a closer look of developments in the five policy categories of the transport sector.

Figure 15: Developments of policies and related activities based on categorial clustering in the Transport Sector



With respect to **planning instruments** most Member States have more than two policies in place. In France, Germany and Slovenia, there is a significant number of planning instruments available. France, among other things, continued the Public Transport Corridors Development Plan including 120 projects for public transportation and investments in innovative actions as well as the National Plan facilitating active mobility with measures to improve the intermodality between public and non-motorised transport. Germany's Federal Transport Infrastructure Plan emphasises railways and waterways for freight transport. Slovenia carries on with progressive planning of urban mobility promoting environmental friendly mobility, e.g. access to city centres only with low-emission private vehicles. The Netherlands and Denmark do not offer any information on planning instruments in the transport sector.

While several **regulatory instruments** were continued between 2011 and 2014, only few were added or improved. The number of policies is particularly driven by a few countries. On the one hand, there are some countries which extensively refer to regulatory instruments in their respective NEEAPs. For instance, in Estonia, five ongoing measures were identified including the Public Procurement Act, standard energy performance certificates for passenger vehicles, mandatory speed limits as well as periodic mandatory technical inspection of vehicles. In Ireland, six ongoing instruments were referred to, such as the EU fleet targets concerning CO_2 emissions of new cars, annual testing of cars over 10 years old and of commercial vehicles, speed enforcement for more efficient road traffic movements. On the other hand, some

countries do not include any information (e.g. Cyprus, Lithuania, Luxembourg). Others only mentioned a single policy instrument like Poland that enforces speed limits.

Most policies defined as **economic incentives** are ongoing without changes. Almost 20 Member States had two or more unchanged policies in place. Austria, Latvia and Lithuania had four ongoing instruments and Malta continued five and added another one. Slovenia presented nine instruments, which can be sub-clustered into (i) freight transport (e.g. inclusion of external costs in road tolls), (ii) public transport (e.g. employers have to provide employees with public transportation tickets) and (iii) private transport (e.g. motor vehicle tax based on CO_2 emissions and type of fuel). Economic incentives belong to the more dynamic categories in the transport sector with 25 newly set-up and ten improved policies. In particular, the Netherlands and Sweden made significant improvements between 2011 and 2014 with three and two policy instruments, respectively. In the Netherlands, for instance, the tax exemption scheme for very efficient passenger cars was improved as was taxation of company cars now including additional tax liability for company cars depending on CO_2 emissions.

One to two **information and advice** instruments are implemented in most Member States (e.g. Germany, Finland, Greece, Lithuania). On the one end of the spectrum, the NEEAPs of Bulgaria, Cyprus, Czech Republic, Luxembourg and Slovakia do not contain any information in this respect. On the other end, Denmark, Estonia, Ireland and Sweden have four or more policies implemented. Sweden continues, for example, the eco-driving scheme, which incorporates ecologic driving training and driving tests for licence, the semi-annual publication of the ”Car index” with statistics about CO_2 emissions of purchased new cars in Sweden as well as the ”New car guide” and other information websites providing information on fuel consumption. France continues one of its information and advice instruments, advances transport services information newly requiring the mandatory display of CO_2 emissions and newly adds the Topten comparator delivering information about the most energy efficient cars and utility vehicles, for instance.

As in other sectors, several countries do not mention **R&D support** specific to energy efficiency in transport in their NEEAPs or do not have relevant policies available. Most countries do not provide any information in this respect (e.g. Denmark, Greece, Romania). The majority of the ongoing R&D support schemes were found in the Netherlands and Sweden. In the former, several pilot projects facilitate energy-efficient and low carbon transportation, while in Sweden a research-focussed programme on Improving Energy Efficiency in the Transport Sector exists.

2.7.3 Examples of policy packages in selected Member States

From a policy package perspective, the countries that stand out are Austria, Estonia, France, Germany, Italy, Portugal, and Sweden. These countries have implemented policies in each of the five policy areas. Some countries do not offer substantial information on whether they have policies in certain categories in place. Especially,

information on the Cyprian transport sector was difficult to obtain; based on the EEW3 assessment, Cyprus lacks policies with respect to regulatory instruments, information and advice and R&D support.

The following table shows policy packages of Austria, Portugal and Sweden, which may serve as good examples. The changes in the policy design are illustrated with the following symbols:

- O means that the measure is ongoing without significant changes,
- ✔ shows that the policy is new,
- ☒ shows a policy that is ongoing but that was weakened significantly,
- ☑ presents a policy that is ongoing but that was improved significantly.

Abandoned measures are not included in this table.

Table 6: Good examples of sectoral policy packages in the Transport Sector implemented in Austria, Portugal and Sweden

Element of the policy package	Transport sector policies: development from 2011 to 2014		
	Austria	**Portugal**	**Sweden**
Planning instruments	✔ Overall transport plan for Austria (2012): sets targets and guidelines for Austrian transport policy up to 2025; consists of measures in the following areas: electromobility, relocation of transport, true cost of transport, reduction of congestion, noise protection, spatial planning, motorised private transport O Expansion and improvements of public transport O Improvement of combined transport (P&R, B&R) O Improvement of intermodality in goods relocating goods transport to the railways O Expansion of cycling infrastructure, construction of bike parking facilities ✔ Lower Austrian Electromobility Strategy (2014-2020)	O/☑ Mobility and transport plans at a municipal and regional level and measures to manage mobility in companies and hubs (3rd NEEAP, p. 26) O Improve energy efficiency of public transport by introducing minibuses and flexible transport services and integrating taxi services ✔ Plan to Promote Bicycles and Other Soft Modes of Transport (2013-2020): bike sharing solutions, networks of cycle tracks O Improvements in passenger railway transport by new concessionaire ✔ Electric mobility again (2015) being promoted, after being abandoned in 2011 (Portugal has a network of roughly 1 300 public electric charging stations, since 2010, one of the most comprehensive in Europe)	O Green corridors O Improving energy efficiency in building and operating roads, railways and waterways ✔ Collaboration with Finland to make ice-breaking more efficient, signed 2012
Regulatory	O Speed limits	O Regulations for	O Requirements on

instruments	O Parking space management	managing energy consumption in the transport sector: audits improving energy intensity or reducing specific consumption (operators of transport fleets and the transport fleets of companies)	procurement and leasing of green vehicles by the authorities ☑ Lower speeds: many local authorities in Sweden introduced new, lower speed limits with 30 or 40 km/h the norm in urban areas (2010/2011) O Eco-driving is incorporated into driving tests for vehicle licence class B O technology procurement (2011-2014): 1,0000 electric vehicles and hybrids, city of Stockholm and Vattenfall O/☑ Automatic speed surveillance: by the end of 2013 there are 1,100 cameras in the country
Economic incentives	O Subsidies for vehicles with efficient propulsion systems: In most individual Austrian regions and a number of towns and municipalities for private drivers (e.g. electric vehicles, scooters and pedelecs) Financial support by the Ministry of Environment for municipalities, companies, regions and tourism sector: subsidies of maximum 10 vehicles per company Conversion of conventional cars towards alternative propulsion is funded ✔ Subsidies for electromobility in Lower Austria (since 2014): EUR 2 Mio/year ☑ Standard fuel consumption: tax is progressively linked to fuel consumption and CO_2-emissions of vehicle; since 2015 it is combined with a malus for passenger cars > 250g CO_2/km: for every gram above the maximum, an additional fee of EUR 20 per every exceeding gram has to be paid	O Green taxes: different rates of vehicle taxes and road tax based on specific CO2-emissions No information on developments regarding the purchase tax No information on developments regarding the excise tax on biofuels	O CO_2-based road tax/ vehicle power tax ☑ Company car taxation: tax on the fringe benefit for the car ↓; since 2012, full reduction for plug-in hybrids and vehicles running on biogas ☑ Congestion charge: since 2013 also introduced in Gothenburg ✔ Environmental vehicle tax waiver: tax exemptions for five years for Euro 5, Euro 6, electric vehicles or hybrid vehicles (since 2013) O "Super-green vehicle premium": about 4,200 EUR per vehicle for private individuals and 35% of the difference between the price of the new car and the nearest comparable car for enterprises, the public sector and associations, maximum of 50 g CO_2/km

	○ Monthly tax on motor vehicles based on engine power; electric vehicles are excluded from the tax ○ Mineral oil tax ○ Toll on motorways and expressways		
Information and advice	☑ klima:aktiv programme consists of the five layers a) mobility management consulting programmes, b) awareness & information campaigns, c) financial support programmes, d) partnership & awards and e) advanced education & certification. It covers the following areas: mobility management, conversion of vehicle fleet to alternative propulsion systems, electromobility and encouraging cycling, innovative public transport services, eco-driving ○ Eco-Drive campaign	○ Promote eco-driving by passenger and goods transport operators ○ Green tyres: labelling and information campaigns on correct pressure and tyre calibration	○ Eco-driving ○ Eco-driving in rail traffic as concept ○ ”Car index” ○ “New car guide”
R&D support	✔ Within the klimaaktiv campaign, there are different pilot projects	○ Promoting the acquisition of Electric Vehicles: charging infrastructure, demonstrating the advantages of EV. It was introduced again in 2015	○ Programme on Technology Procurement and Introducing Energy Efficiency Improvements in the Transport Market (2010-2013) ○ Research-focussed programme on Improving Energy Efficiency in the Transport Sector ○ Many activities financing research in the following fields: LETS 2050, FFI, energy systems in railway vehicles, energy efficient types of transport, logistics, planning, behaviour and physical initiatives

2.8 Concluding remarks and recommendations

As it was already highlighted in the introductory part of this chapter, the NEEAPs differ substantially from each other in terms of content and detail of presentation. This complicates comparability – not only for the purposes of this study but also for EU-level policy makers in order to get a coherent picture on the inventory of policies implemented in the Member States.

For instance, it was found that some countries elaborately presented achievements in terms of policy formation in 2011, but the NEEAP of 2014 does not provide any information on these previously stated policies. Hence, it remains unclear whether these initiatives were continued or abandoned. Some NEEAPs present policies in a rather imprecise manner. While one can, thus, at least assume that such policies are ongoing, it does not become clear whether the instrument was improved, weakened or just remained ongoing. It should also be emphasised that across all of the sectors scrutinised, the level of information on R&D is particularly low indicating the need for more and transparent information. Some NEEAPs also frequently refer to subnational policies, e.g. implemented in some regions of a country. In this respect, information is missing on whether similar instruments exist in other regions as well.

In order to increase the value of the NEEAPs, they should

- include and build on former document versions and refer to previously stated policies,
- provide information precisely and comprehensively in terms of energy savings impact (estimated ex ante or ex post; quality and methodology of estimate), year of introduction, year of completion with explanation, changes in implementation with explanation (if applicable).
- also factor in the level at and degree to which policies are implemented – if sub-national policies are included in the NEEAPs, it should be made transparent whether similar policies exist in other regions of the country as well.

3 The EEW survey: the experts' perspective on the progress in energy efficiency policies since the second NEEAP

3.1 Introduction

One key activity of the EEW3 project was an extensive survey on the implementation results of the second NEEAPs in the 28 Member States. The aim of the survey was to learn from stakeholders and experts how they see the "real-life" progress of energy efficiency policies and their implementation in different sectors since the second NEEAP in their respective country.

The survey was carried out in the first half of 2015. A similar survey was done in 2011/2012 as a part of the EEW2 project.

In order to get a comprehensive picture, it gathered opinions and experience from a wide range of key actors. Experts were consulted in order to learn about the progress in energy efficiency policies on Member State level since 2011. The aim was to learn how far the implementation of energy efficiency policies has progressed in the opinion of persons with day-to-day work in the energy efficiency field. In total, more than 1,100 experts from all 28 EU Member States were consulted about the progress on energy efficiency policy in their own country.

The survey consisted of two different elements:

- a quantitative survey, using a questionnaire (1096 questionnaires were completed and used to draw conclusions) and
- a qualitative survey, using an interview guideline (3 experts in each Member State were interviewed, in total, 84 experts).

The focus of the questions both in the quantitative and in the qualitative survey was on the progress of energy efficiency policies and their implementation in different sectors since the second NEEAP. More information on the approach and the results of these two surveys can be found in the following sections and in more detail in the overall survey report, which is available at the EEW3 webpage.[7] This report includes also detailed results for all 28 EU Member States. Key results of the survey are also included in the 28 country reports published in the context of the Energy Efficiency Watch project.

3.2 Approach and methodology of the survey

The approach chosen for the stakeholder survey aimed at reflecting the variety of experiences of a broad range of actors spanning 28 countries with vast differences

[7] See http://www.energy-efficiency-watch.org/index.php?id=90.

both in energy efficiency policy traditions as well as in specific progress in the past years.

Stakeholders consulted came from the business field, the research and consultancy community, from the national, regional and local levels (administrations and energy agencies), as well as from NGOs and associations.

Similar to the approach taken in the 2012 survey, the following methods were chosen to collect inputs:

- the quantitative survey, using a questionnaire, aimed at reaching a large number of stakeholders and providing an insight into overall trends, mostly in which sectors progress was made and which sectors not
- the qualitative survey (interviewing carefully selected energy efficiency experts in each Member State using an interview guideline) had the objective of getting a deeper understanding of specific reasons for the lack of progress as well as collecting good practice examples of energy efficiency policy implementation

Figure 16: Elements of the EEW survey

- **Quantitative Survey**
  - quantitative information on energy efficiency progress, "snapshot picture"
  - questionnaires (1096 completed online or during main European conferences)
- **Qualitative Survey**
  - qualitative information on energy efficiency progress
  - oral interviews with 3 experts per Member State based on an interview guideline

A meeting among the project partners was held in November 2015 to discuss the main results from these different approaches and to agree on conclusions.

3.2.1 Quantitative survey

In co-operation with the project partners and the University of Linz (Institute for Environmental Management in Companies and Regions) a questionnaire was developed and tested. It aimed at collecting quantitative data on the progress in energy efficiency policies and their implementation in each Member State since the adoption of the second NEEAP. This method allowed to reach a large number of stakeholders.

The questionnaire was grouped around the following main topics (a copy of the questionnaire can be found in the annex):

- overall ambition of the energy policy of the addressed Member State and its progress in the last 3 years
- targets and obligations foreseen in the EED and the EPBD

- the implementation of specific policies and measures and the tackling of important energy consumption sectors
- most important gaps in national energy efficiency policies
- the ambition of European energy efficiency policies and energy efficiency policy measures to be introduced at European level

The questionnaire consisted of 13 questions related to energy efficiency (excluding those on the country and work field of the interviewees). Several questions included a number of sub-questions, resulting in a total of 37 questions and over 40,000 answers. All answers were aggregated on a Member State level, giving more than 1,000 results on specific issues in individual Member States.

In order to be able to reach out to a large number of stakeholders and to collect a large number of questionnaires, a two-fold approach was taken:

- Conferences and meetings: Experts were encouraged to answer the questionnaires at the occasion of important energy efficiency events and meetings, e.g. the World Sustainable Energy Days 2015 (held in Wels/Austria in February 2015), the 2015 Annual Energy Cities conference (held in Aberdeen/UK in April 2015), meetings and info days held by the EASME as well as events organised within the framework of the EEW3 project, e.g. national business stakeholder and parliamentary workshops.
- Online completion: The questionnaire was made available through the EEW website. The EEW partners informed and motivated experts from their networks and partner energy efficiency networks in all Member States to participate in the survey.

Between January and June 2015, in total 1096 completed questionnaires were collected.

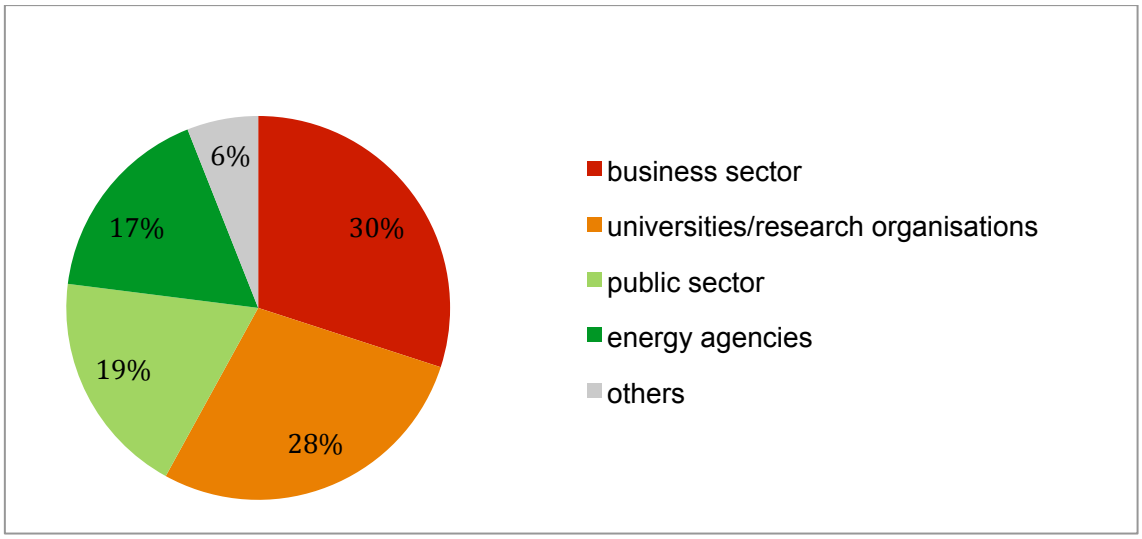
Figure 17: Completed questionnaires by Member States (quantitative survey)

Austria	38	Italy	77
Belgium	32	Latvia	19
Bulgaria	23	Lithuania	23
Croatia	48	Lux	14
Cyprus	15	Malta	14
Czech Rep.	31	NL	30
Denmark	47	Poland	25
Estonia	15	Portugal	58
Finland	27	Romania	26
France	51	Slovak Rep.	17
Germany	83	Slovenia	38
Greece	43	Spain	66
Hungary	25	Sweden	39
Ireland	28	UK	144
		Total	**1096**

The varying number of participants across Member States has to do with the presence of experts in the international events and the partner networks as well as language issues (the questionnaire was in English) and the size of the country (the 4 smallest EU countries had the lowest participation).

Participants in the survey came from the business sector (30%), universities and research organisations (28%), the public sector (19%), energy agencies (17%) and others (6%).

Figure 18: Completed questionnaires by sectors (quantitative survey)



3.2.2 Qualitative survey

Complementing the quantitative data, a qualitative survey was carried out. It aimed at developing a deeper understanding of specific reasons for the lack of progress as well as collecting good practice examples of energy efficiency policy implementation. In each Member State, 3 experts were selected and interviewed by phone.

In order to achieve best possible results, the approach to this survey was developed jointly by the partners.

The interview guideline from the 2012 survey was adapted in a way that it focused on critical issues as well as positive developments in different energy efficiency sectors (public, residential, service, industry and transport sectors).

A special emphasis was put on carefully selecting the interviewees aiming for a balance of different perspectives in each Member State. In order to be able to report on progress over time, the project team aimed to interview the same experts as in the 2012 survey.

For the 2012 survey, a list had been collected by the project partners which included about 200 experts across all Member states. The names had come from the professional networks of the project partners. Also, experts involved in the Odysee-Mure project had been included. All experts included in the list were deemed to have a good overview of the energy efficiency policies in their respective countries as well as having worked in energy efficiency for a number of years and having gained a good insight into policy development and implementation. As a next step, the experts had been grouped in different categories (experts working on local, regional and national level, in research and consulting, in professional associations and NGOs). In a partner meeting, the experts had been jointly selected, with the aim to ensure a high-level of knowledge and a balanced representation of different actors in each Member State. Also a reserve list had been drawn up in case the experts selected were not available for an interview.

Before the start of the survey, the list of interviewees was reviewed in a project meeting by the partners and where necessary, new names were added, following the same approach as for the 2012 survey.

Each of the three involved networks (Fedarene, Energy Cities and ECEEE) took over 9 or 10 countries. An introductory eMail was sent out by Eufores informing the potential interviewees of the importance of participating. This was followed by eMails and phone calls from the respective network partner to set up a date for a phone interview.

In overall terms - keeping in mind how many surveys were carried out - the response was rather positive and many of the experts included in the first list were interviewed (without needed to resort to the reserve list).In those cases, where experts turned out

to be unavailable or not willing to participate, experts from the reserve list were selected.

Out of the 81 experts interviewed from 27 Member States (without Croatia), more than two thirds were the same persons as in 2012 and 10% came from the same organisation respective interviewees in 2012.

After the phone interviews were carried out (which generally took between 45 and 90 minutes), a transcript was sent to the interviewee allowing him/her to clear up possible misunderstandings as well as offering the option to provide additional information. The interviews were carried out between December 2014 and June 2015.

In order to collect real insights and opinions, the answers of the interviewees are treated confidentially, which is a standard approach in surveys. Their names are not disclosed, as due to the small number of interviewees per country, reading through the country summaries might allow making a direct connection between certain statements and the persons involved.

In November 2015, a project partner meeting was held in which the results of the quantitative and the qualitative survey were brought together and discussed.

The project team agreed that the know-how available "on the ground" was very valuable and that many experts - also due to the projects' diligent approach - were willing to share their knowledge and insights. The members of the project team were impressed by the commitment and quality of work carried out in some countries despite very challenging policy and financial framework conditions.

3.3 Survey results across Member States

The following sections summarise the main results of the survey across the EU Member States. Results on a country by country basis are presented separately in the overall survey report as well as in the EEW3 country reports.[8]

As with any survey, the results present the perceptions of the interviewees and their opinions on energy efficiency policies in their own countries. The survey is not an analysis of the absolute levels of energy efficiency in each Member State based on common measurement indicators, but the personal views of the experts in that specific country on the progress in energy efficiency policies in each Member State. Therefore, these results are not views of the authors of this study.

The focus of the survey was to get an impression on the progress of energy efficiency policies since the second NEEAPs and not to establish a ranking of absolute levels of energy policy developments.

[8] See http://www.energy-efficiency-watch.org/index.php?id=90.

Surveys are always "snapshot pictures" which are influenced by current events. The survey was carried out in the first half of 2015. Country and overall results should be seen in this timing context.

Many of the questions look back 3 years (2011 - 2014), roughly the period of the implementation of the second NEEAPs.

3.3.1 Progress indicator

In order to compare the progress across countries and policy fields, a "progress indicator" was calculated from five relevant questions of the quantitative survey (see annex for the questionnaire), namely question 1 (ambition of energy efficiency policies), question 2 (progress in the last 3 years), question 4 (annual savings target), question 7 (NZEB target) and question 8 (improvements in key energy policy areas). The answers were weighted (the most positive answer by 100, the least positive one by 0).

The ranking resulting from this calculation shows Denmark, Finland and Estonia as the three countries where energy efficiency policies progressed most since the second NEEAP while Spain, UK and Hungary achieved the least progress.

Figure 19: Progress indicator 2015 - Ranking of Member States

	Austria	5		Italy	13
	Belgium	13		Latvia	15
	Bulgaria	23		Lithuania	9
	Croatia	10		Lux	10
	Cyprus	5		Malta	25
	Czech Rep.	15		NL	19
	Denmark	**1**		Poland	22
	Estonia	**3**		Portugal	21
	Finland	**2**		Romania	20
	France	12		Slovak Rep.	15
	Germany	5		Slovenia	5
	Greece	24		Spain	28
	Hungary	26		Sweden	4
	Ireland	15		UK	27

In the 2012 survey, a progress indicator was also calculated using the same methodology. It was partly based on the same questions as in 2015 (relating to the ambition and the overall progress) and partly on other questions (relating to the then different energy policy context set by the ESD). Despite these differences, it seems justified to compare these results as an indicator for overall policy progress.

While the "top group" remains virtually unchanged (Denmark, Finland, Estonia), there are some significant "up-and-down" movements for many Member States. A significant slowing-down of progress was reported for Malta, Portugal, the UK and Spain. Significantly increased progress was reported for Cyprus, Italy, Slovakia and the Czech Republic.

Figure 20: Progress indicator 2015 - Comparison 2012

Austria	5	13	↗
Belgium	13	18	↗
Bulgaria	23	16	↘
Croatia	10		
Cyprus	5	22	↑
Czech Rep.	15	25	↑
Denmark	**1**	**2**	
Estonia	**3**	**3**	
Finland	**2**	**1**	
France	12	10	
Germany	5	8	
Greece	24	16	↘
Hungary	26	20	↘
Ireland	15	11	↘
Italy	13	27	↑
Latvia	15	12	
Lithuania	9	18	↗
Lux	10	3	↘
Malta	25	3	↓
NL	19	24	↗
Poland	22	21	
Portugal	21	6	↓
Romania	20	23	
Slovak Rep.	15	26	↑
Slovenia	5	7	
Spain	28	15	↓
Sweden	4	9	↗
UK	27	13	↓

3.3.2 Overall ambition

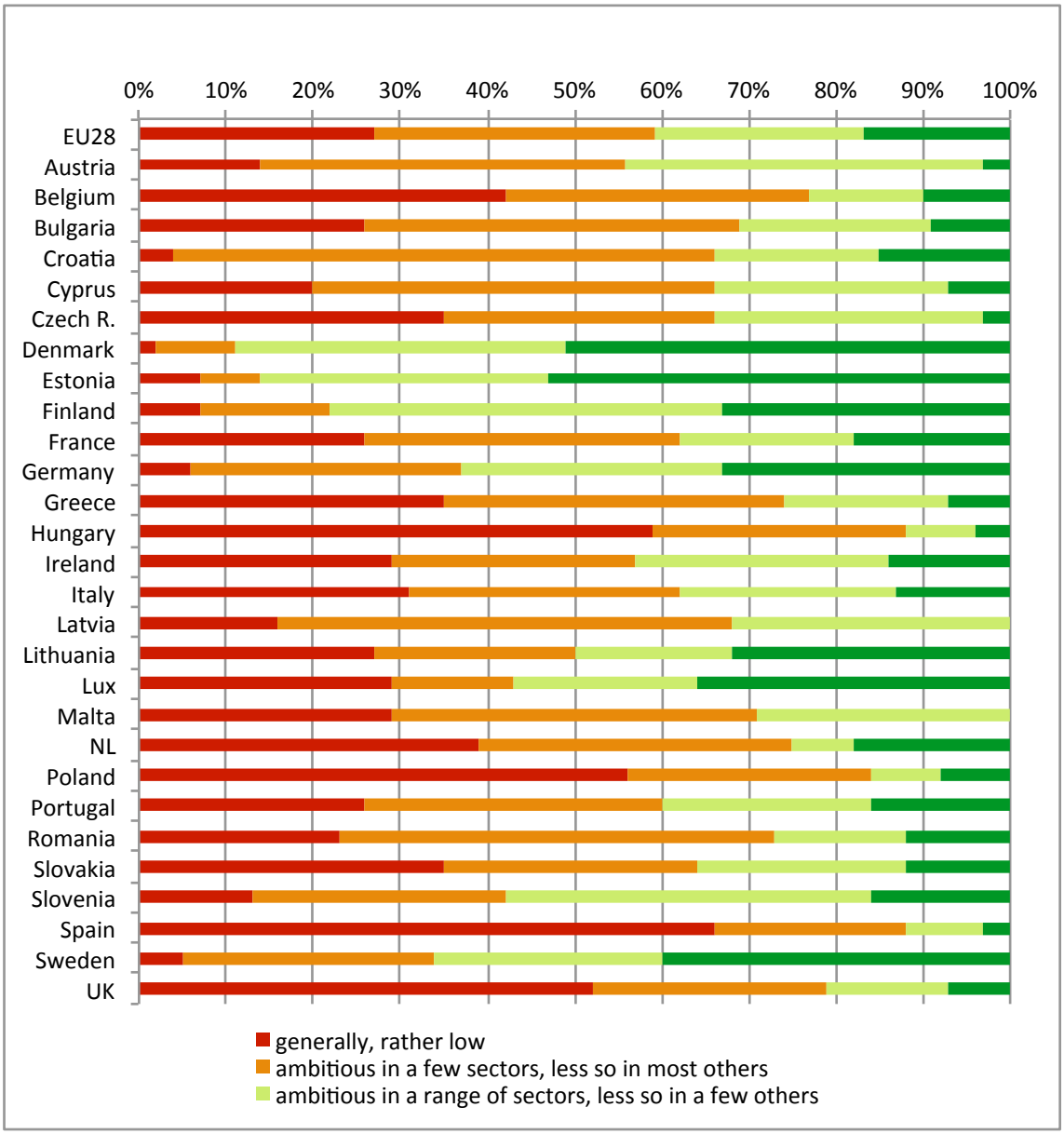
The first question of the survey aimed to get an impression of the "energy efficiency policy climate" in each country and a feeling of how the experts see the general aspirations of their country in energy efficiency policies.

A very varied picture presents itself: Combining those that see the ambition as "generally rather low" and as "ambitious in a few sectors, less so in most others", the following picture emerges: Spain, Hungary and Poland are seen as the least ambitious by the experts from the respective countries. On the other end, Denmark, Estonia and Finland are rated highest by their country experts ("ambitious in a range of sectors" combined with "generally, rather high ambition"). This very mixed picture across Member States results in an EU average with 60% with rather low levels of ambition and 40% with higher levels of ambition.

Compared to the 2012 survey, the average remains quite unchanged. However, there are some significant changes for some of the countries: Italy, the Slovak Republic, Cyprus and the Czech Republic are now in the mid-field (compared to rather low levels of ambition in 2012) whereas Estonia - which was significantly below the European

average in 2012 - is now seen as very ambitious by its energy efficiency experts. The most significant decreases in the level of ambition are seen for the UK and Spain.

Figure 21: EU 28: overall ambition of the energy efficiency policies



3.3.3 Progress in the last 3 years

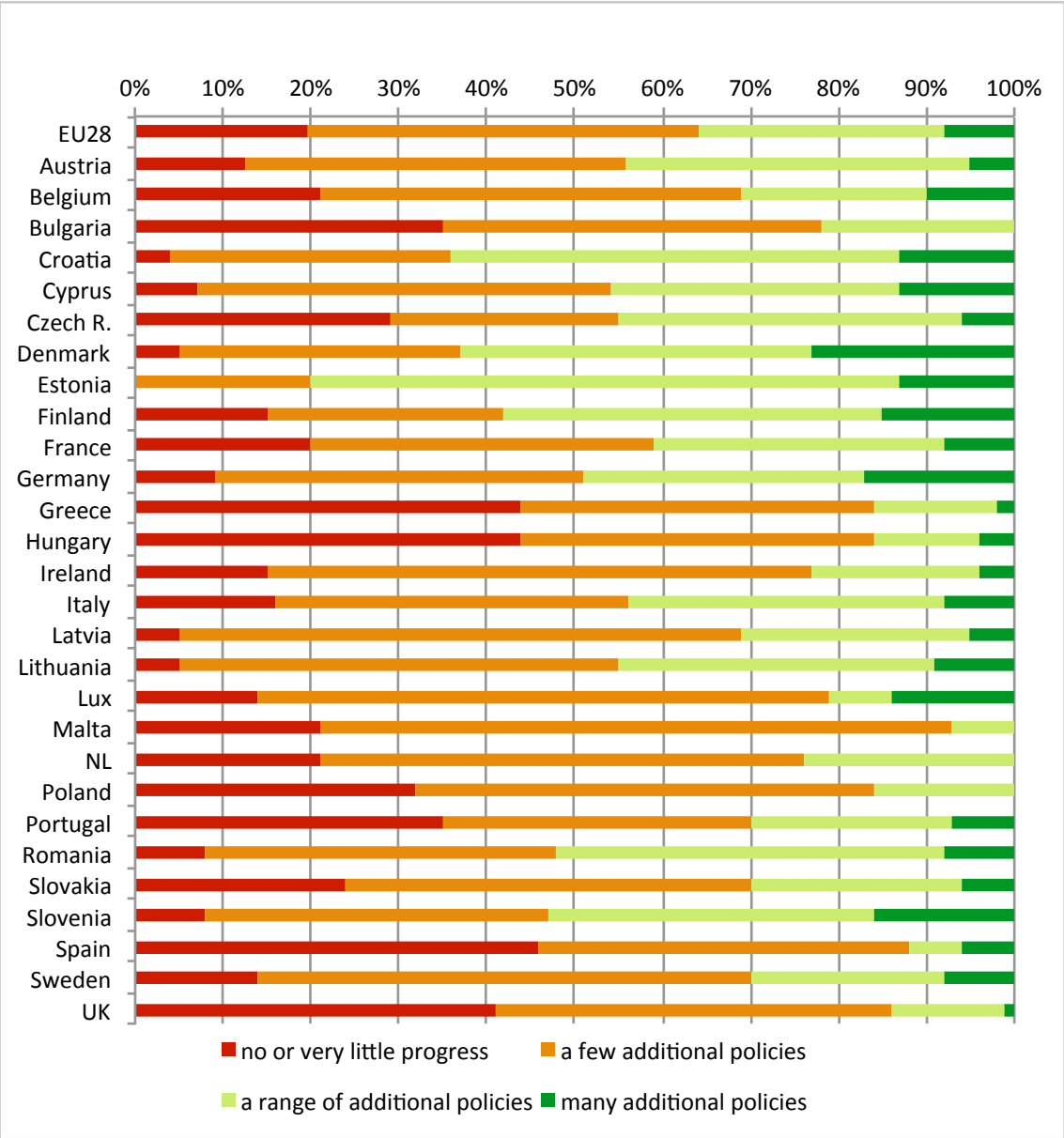
The second question focuses on the specific progress in the last 3 years (this was roughly the period of the implementation of the second NEEAPs).

The highest values for "no or very little progress" combined with "a few additional policies" are given by the experts from Malta, Spain and the UK, followed by Poland,

Hungary and Greece. On the other end of the spectrum, the experts from Estonia, Croatia and Denmark see the highest recent progress.

The most significant positive changes compared to 2012 are reported for the Czech Republic, Lithuania and Romania, the most negatives ones for Malta, Spain, Luxembourg and Ireland.

Figure 22: EU 28: progress of energy efficiency policies in the last 3 years



3.3.4 Targets and obligations

The next block of questions relates to Member State targets and obligations foreseen in the EED and EPBD.

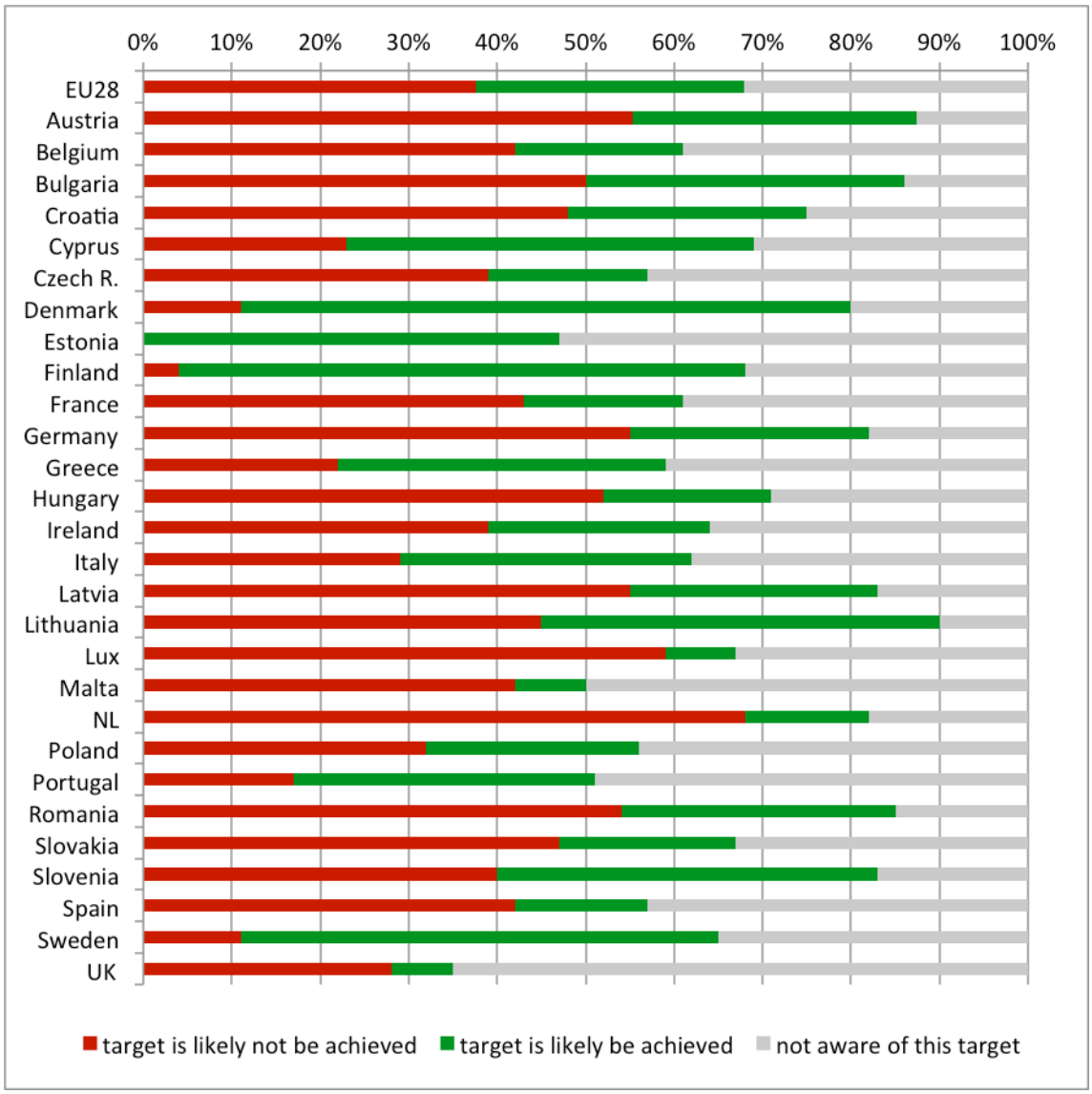
The first one concerns the annual target of new savings of 1.5% of the annual sales to final consumers (Art. 7 of the EED). This target is not well known among the experts, among others because it is being implemented in the respective policy context with a variety of programmes. Also, in some countries, there was a stronger public debate on policy measures relating to this target and the obligation schemes than in others.

The most pessimistic experts are those from the Netherlands, followed by Luxemburg, Austria, Germany, Latvia, Romania and Hungary - in these countries more than 50% believe that the target will not be achieved.

Most optimistic are the experts from Denmark and Finland where more than two thirds think that the target will be achieved, followed by Sweden. Estonian experts are also very positive: all experts who are aware of the target believe that it will be achieved (47%). Only in 10 countries more than a third of the experts deem the target to be achievable.

The level of awareness of the 1.5% target is highest in Lithuania, Austria and Bulgaria and lowest in the UK, Estonia and Malta.

Figure 23: EU 28: achievement of the annual target of new savings of 1.5% of the annual energy sales to final consumers



The second question in this bloc relates to the introduction of energy efficiency obligation schemes (Art. 7 of the EED). As this is one of the core elements of the EED, a decision was taken to include this article in the survey despite the two-fold challenge with this question. The first is the term used for it. There are a number of countries with obligations schemes predating the EED which are widely known among the experts but under other names (e.g. White Certificates). Therefore, many experts probably did not associate them with the Article 7. The second was the timing of the survey which coincided with a period of decision making in many Member States in relation to this article. The results of this question should therefore be seen under these caveats.

The countries where the most experts observe the introduction of energy efficiency obligation scheme are Austria, France and Denmark. The countries with highest percentages with negative answers were the Czech Republic, Hungary and Slovakia.

Again, there is a rather high number of experts who are not familiar with this issue. However, there is a rather big difference in many Member States - for example in Latvia, the target is very well known whereas energy efficiency obligations are not. On the other hand, in the UK, more than two thirds of the experts are familiar with the obligation scheme but also two thirds are not aware of the 1.5% target.

Figure 24: EU 28: introduction of energy efficiency obligation schemes for energy distributors/retailers

A rather different picture presents itself for the next question. It relates to Article 9 of the EPBD which requires all new buildings to be nearly zero-energy buildings (NZEB)

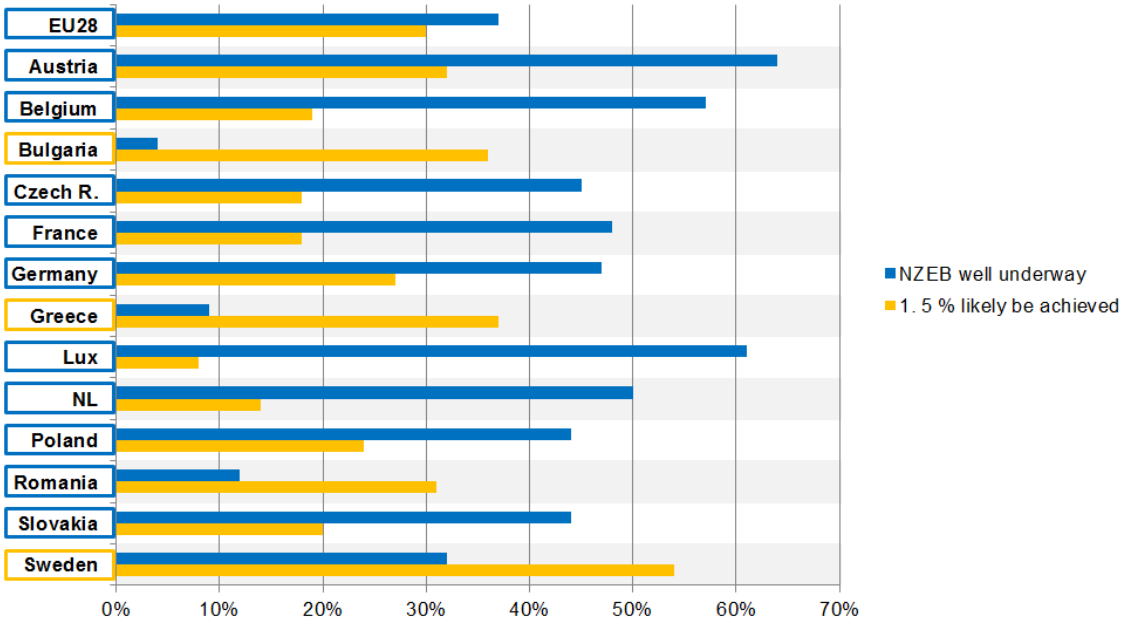
by the end of 2020, public buildings already in 2018. In Romania, Greece, Malta, Spain, Hungary and the UK more than 70% of experts believe that their country is lagging very much behind in achieving this target. The most optimistic are the Danish experts: 85% think that the implementation is well underway, followed by Estonia, Austria, Finland and Luxembourg.

Figure 25: EU 28: on track to meet the NZEB target

By comparing the opinions on achieving the 1.5% and the NZEB targets a variance in policy progress can be seen: Only in 10 countries do more than a third of the experts deem the 1.5% target to be achievable whereas this is the case in 15 countries for the NZEB target.

Also, there is a number of countries that reported making significantly more progress in one of the two targets. Ranking the progress among Member States, Bulgaria, Greece and Sweden are seen to be doing much better with the 1.5% target than the NZEB target, whereas it is the other way around for Luxembourg, Belgium, the Netherlands, Austria, France and the Czech Republic.

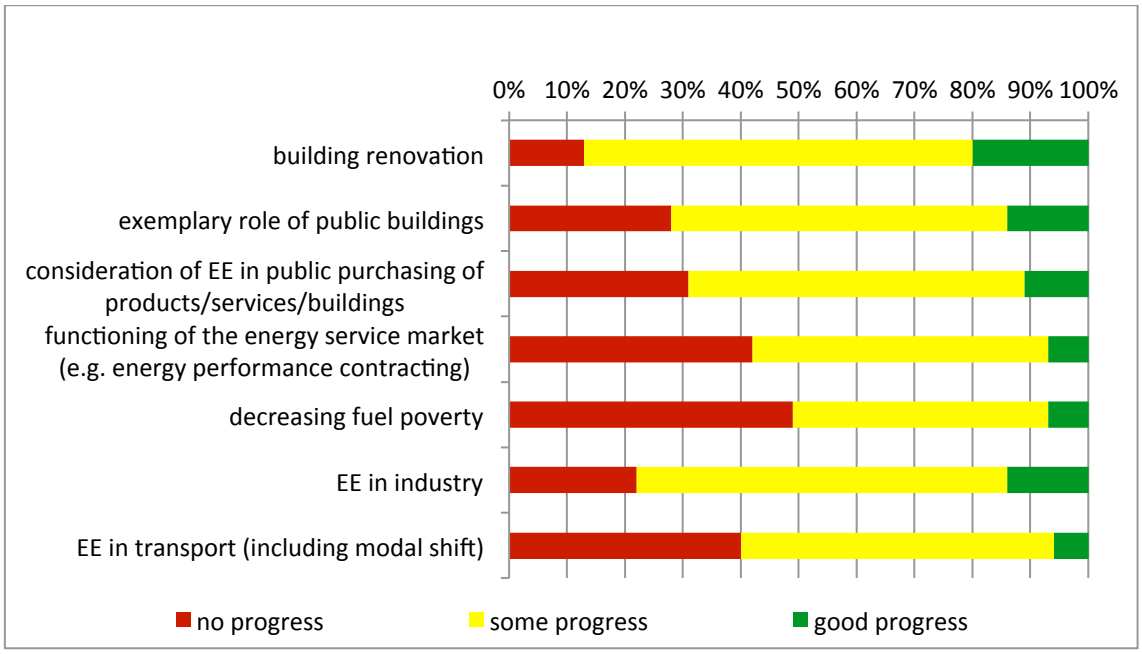
Figure 26: Targets and obligations: how well is your country doing?



3.3.5 Specific policies, measures and sectors

The third block of questions focuses on policy areas recognised as important in the EED and the EPBD. The first asks for the progress made in actual implementation in a range of energy efficiency fields. Across instruments and Member States, the least progress is being observed in decreasing fuel poverty, the functioning of the energy service markets and energy efficiency in transport. The fields where relatively the most progress is being made are building renovation, energy efficiency in industry and in public buildings - three areas with significant European policy activities in the past years.

Figure 27: EU 28: improvements in actual implementation



In **building renovation**, the country with highest progress is Estonia (60% "good progress"), followed by Croatia and Luxembourg (43 and 38% respectively). The countries with the most answers for "no progress" are Malta (50%), Spain (44%), the UK (31%) and Portugal (29%).

Relatively the most progress in the "**exemplary role of public buildings**" is reported from Slovenia, Finland, Croatia, Luxembourg and Sweden (between 34 and 31% "good progress). The highest percentages for "no progress" are given by experts from Portugal, Spain, Greece and Romania (between 55 and 50%).

Considering **energy efficiency in public purchasing** of products, services and buildings has progressed most in Sweden (31% "good progress"), followed by Cyprus and Malta (27 and 23% respectively). Most "no progress" answers are given by the experts from Hungary (66%), Bulgaria, the Czech Republic and Slovakia (between 55 and 50%).

Relatively the most "good progress" in the **functioning of the energy service market** is observed by the experts from Denmark, Finland and Cyprus (between 28 and 20% "good progress") whereas more than two thirds of the Maltese, Bulgarian and Greek experts see "no progress" in this field.

In addressing **fuel poverty**, the most experts reporting "good progress" are from Sweden, Denmark and Finland (between 31 and 23%). In Greece, Luxembourg, Bulgaria, Spain and the UK, more than 70% of the experts see no progress.

Good progress for **energy efficiency in industry** is reported from Finland (58% "good progress"), followed by Denmark and Sweden (41% and 27% respectively) whereas more than 50% of the Luxembourgish experts see no progress, followed by Greece and Cyprus (46% and 40% respectively).

Progress in **energy efficiency in transport** remains a challenge in most Member States: the highest percentage of "good progress" is 23% for Finland, followed by 19% for Sweden and 14% for Bulgaria. On the other end of the spectrum are Luxembourg, Belgium, Latvia, Portugal, Ireland, Greece, Malta and Denmark - where more than 50% of the experts see no progress.

Figure 28: Improvements in actual implementation in the last 3 years

How do you see the improvements in actual implementation in the last 3 years in the following fields?

	good progress	no progress
Building Renovation	1. Estonia 2. Croatia 3. Lux	26. UK 27. Spain 28. Malta
Public Buildings	1. Slovenia 2. Finland 3. Croatia	26. Greece 27. Spain 28. Portugal
Public Purchasing	1. Sweden 2. Cyprus 3. Malta	26. Czech R. 27. Bulgaria 28. Hungary
EE in transport	1. Finland 2. Sweden 3. Bulgaria	26. Latvia 27. Belgium 28. Lux

The detailed results per Member State are included in the annex of the survey report.

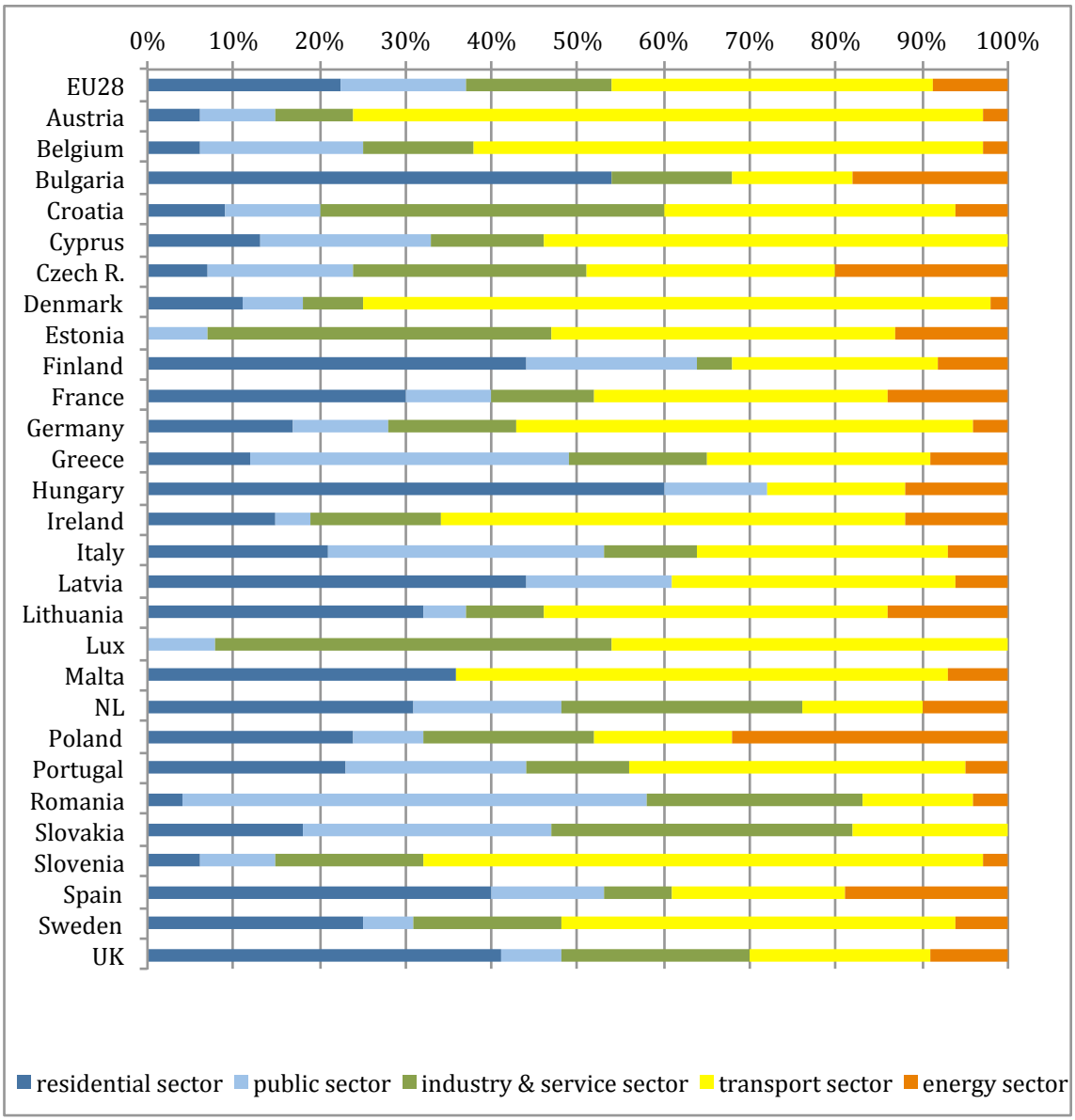
3.3.6 Gaps in energy efficiency policies

Experts were also asked in which sector they saw the most important gap in the energy efficiency policies in their respective country. In the average across EU countries, transport is in the lead (38% see the largest gaps in this field), followed by the residential sector with 21%. There was virtually no change in these perceived gaps (average across the EU) compared to the 2012 survey.

There are some significant differences across countries in where the experts see the biggest gap in energy efficiency policies: By far the largest gap is found in the transport

sector in Denmark and in Austria: in both countries, 73% see energy efficiency in transport as the most important policy gap (again, no change at all since 2012). Also large gaps in residential sector are reported from Hungary (60%) and Bulgaria (54%). In a number of countries, the percentage for the residential sector as the weakest energy efficiency policies has decreased.

Figure 29: EU 28: most important gaps in energy efficiency policies

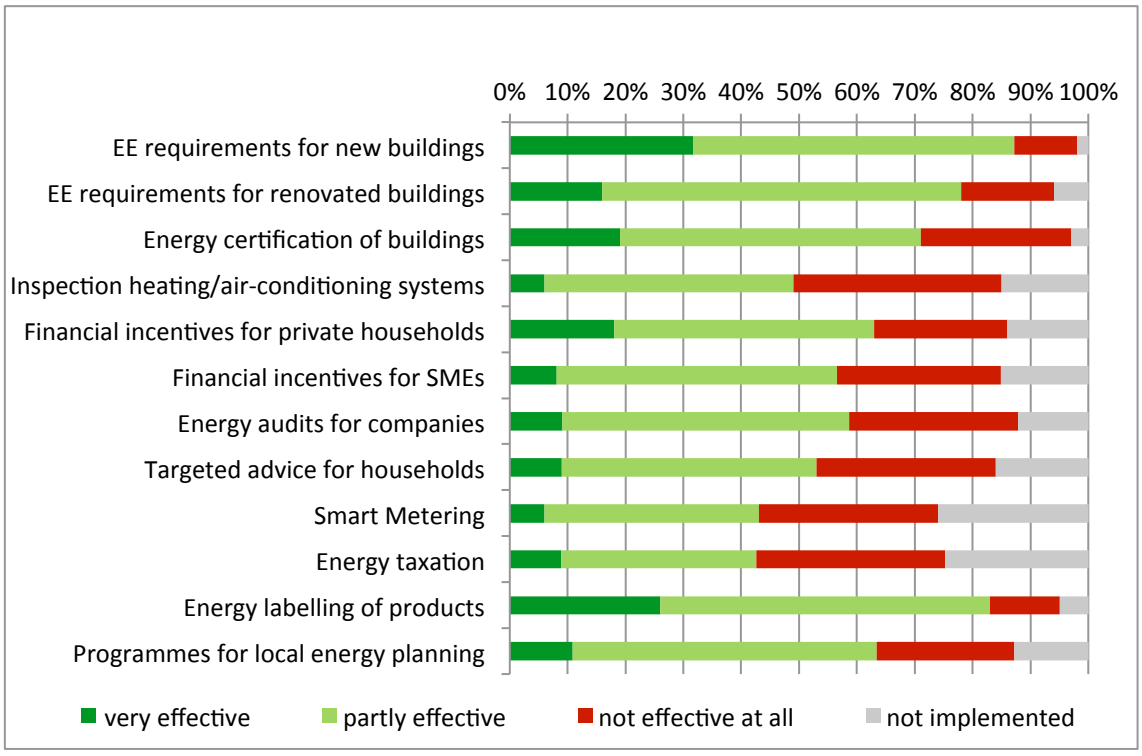


3.3.7 Specific energy efficiency policy instruments

A set of questions relates to a range of specific energy efficiency policy instruments mentioned in the ESD or the EPBD. They look at the **perception** of the effectiveness of these instruments in the Member States.

In overall terms, energy efficiency requirements for new and renovated buildings and labelling of products are seen as the instruments with the highest positive impact - between 87 and 78% of the experts agree that they are at least partly effective. On the other end of the spectrum, more than a third of the experts considers the inspection of heating and air-conditioning systems as not effective. However, this does not give any indication on **why** experts see a type of instrument as effective or not in their country.

Figure 30: EU 28: degree of effectiveness of different policy instruments



Energy efficiency requirements for new buildings are seen very positively in many countries. The highest ratings for "very effective" are given by the experts from Luxembourg (77%) and Denmark (67%). In Malta, 59% of the experts think that they are not effective at all.

Rather good ratings are also given to **energy efficiency requirements for renovated buildings.** More than 90% of the experts from Latvia, Denmark, Estonia and Luxembourg consider them as at least partly effective. 43% of the Estonian and 35% of the Croatian experts see them as very effective. Again, more than 50% of the Maltese experts rate them as "not effective at all".

Energy certification of buildings has also become a well-established instrument in most European countries - although with a larger variance between countries. 100% of the Irish and 96% of the Croatian experts see them as at least partly effective. More than 50% of the Bulgarian and Dutch experts see this instrument as not effective at all.

Less positive are the results for the **inspection of heating and air-conditioning systems**. Only in Malta, Finland and Luxembourg, do 70% of the experts or more consider them as at least partly effective. In Latvia, Romania, Estonia and Poland, over 50% of the experts see this instrument as not effective at all.

Financial incentives for private households for energy efficiency investments are seen most positively by experts from Malta, Cyprus, Luxembourg and France: more than 90% consider them as at least partly effective. 44% of British and Dutch experts see them as not effective at all.

Experts from Cyprus, Germany, Austria and Croatia see **financial incentives for SMEs** for energy efficiency investments most positively - 92%, 78% and 74% see them as at least partly effective. More than 40% of the UK and Luxembourg experts consider them as not effective at all.

Finnish, Polish and German experts have the most positive view of the effectiveness of **energy audits for companies**. 88%, 78% and 76% respectively see them as at least partly effective. They are least positively seen in Bulgaria, Slovakia, Hungary, Italy and Luxembourg: between 47 and 40% see them as not effective at all.

Energy advice for households is most successful in Slovenia, France, Sweden and Finland: more than 80% of the experts in these countries see it as at least partly effective. More than half of the Latvian, Bulgarian, Spanish and Irish expert see it as not effective at all.

Smart metering as an energy efficiency policy instrument is seen as most effective by the experts from Finland and Malta: more than 90% see it as at least partly effective. 50% of the Estonian experts consider it as not effective at all, followed by those from France (47%) and Spain (45%).

94% of the Swedish, 84% of the Danish and 83% of the Finish experts see **energy taxation** as at least partly effective - nearly 50% of the Swedish and Danish experts even as very effective. More than 50% of the French and the Polish experts see it as not effective at all.

Energy labelling of products is a very popular instrument among energy efficiency experts: 100% of the experts from Luxembourg and Malta see it as at least partly effective. In France and Latvia, about a quarter of the experts see it as not effective at all.

More than 80% of the experts from Luxembourg, Cyprus, Austria and Denmark consider **policies and programmes for local energy planning** (e.g. the Covenant of Mayors) as at least partly effective.

When analysing the overall perception of effectiveness of the different policy instruments, the following picture emerges: Energy efficiency requirements for new buildings and energy labelling of products as seen as effective policy instruments by more than 70% of the experts in more than 25 Members States. Also energy efficiency

requirements for renovated buildings are perceived to be effective by nearly 80% of the Member States.

On the other end of the spectrum, energy taxation, smart metering and the inspection of heating and air-conditioning systems are to be found - in 21 respectively 17 Member States more than 30% of the experts so them as not effective at all. Again, this does not give any indication on **why** experts see a type of instrument as effective or not in their country, and on whether it could become effective with better design and or implementation.

Figure 31: Effectiveness of policy instruments

How effective are the following policy instruments in your country?

Number of countries

	Over 70 % see them as **partly/very effective**	Over 30 % see them as **not effective**
EE requirements for new buildings	26	2
Energy labelling of products	25	0
EE requirements for renovated buildings	23	2
Energy certification of buildings	15	8
Programmes for local energy planning	12	10
Financial incentives for private households	11	9
Financial incentives for SMEs	6	11
Energy audits for companies	6	12
Targeted advice for households	6	13
Inspection heating/air-conditioning	2	17
Smart metering	2	17
Energy taxation	4	21

Experts also stressed that with the paradigm shift of decentralisation of energy production and the changing role of energy consumers to prosumers, the involvement of the regional and local level becomes even more important.

3.3.8 Need to act on European level

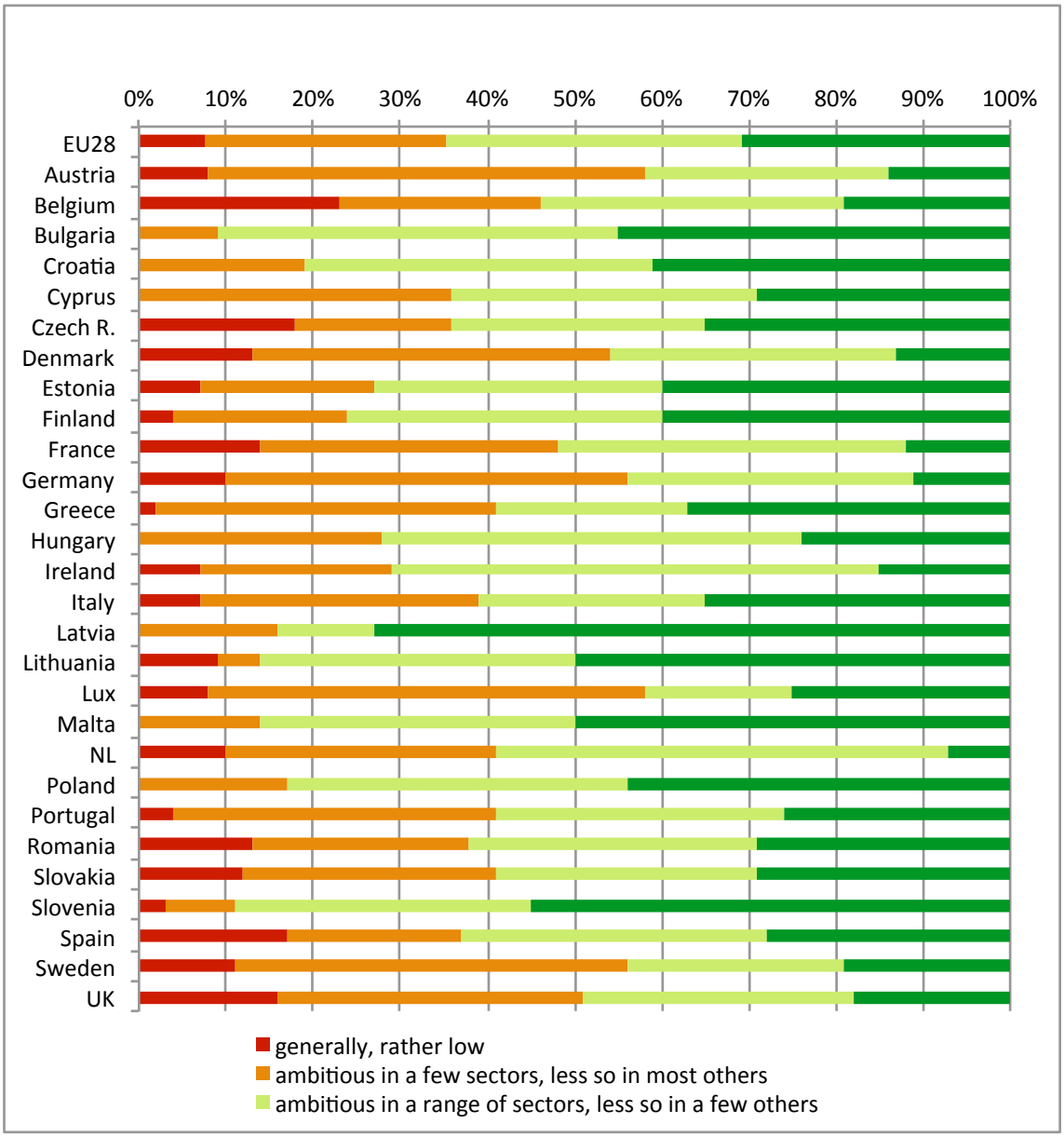
The final set of questions aimed at assessing the progress on European level and where the experts see the highest need to act on European level.The first one related to the level of ambition in energy efficiency policies in Europe.

It seems that experts from countries with long-standing energy efficiency policy tend to have a lower opinion of the level of EU ambition than those from countries where the impact of European energy efficiency policy was more visible over the last decade: In

Austria, Luxembourg, Germany, Sweden and Denmark, more than 50% of the experts see the European energy efficiency policies as ambitious only in a few sectors or generally rather low. On the other hand, more than 80% of the experts from Bulgaria, Slovenia, Lithuania, Malta, Latvia, Poland and Croatia think that it is ambitious in a range of sectors or generally rather high. Across countries, about a third of the experts consider European energy efficiency policy as not very ambitious whereas two thirds think they are.

Compared to how they see the level of ambition in their own country, experts from 19 countries see European policies as more or even significantly more ambitious. In 7 countries, the ambition level is seen as rather similar. Only the experts from Denmark and Sweden consider it significantly less ambitious.

Figure 32: EU 28: overall ambition of the energy efficiency policies in Europe



The next question looks at overall economic impacts of energy efficiency policies. The highest level of agreement by experts was with the statement: "Ambitious energy efficiency policies are a key instrument to improve Europe's energy security". 92% of all experts agree. In Austria, Denmark, France, Malta and Portugal, it was even 100%. In comparison, the countries with the highest "disagreement" levels are Finland and Poland (30 and 26% respectively disagree with the statement.

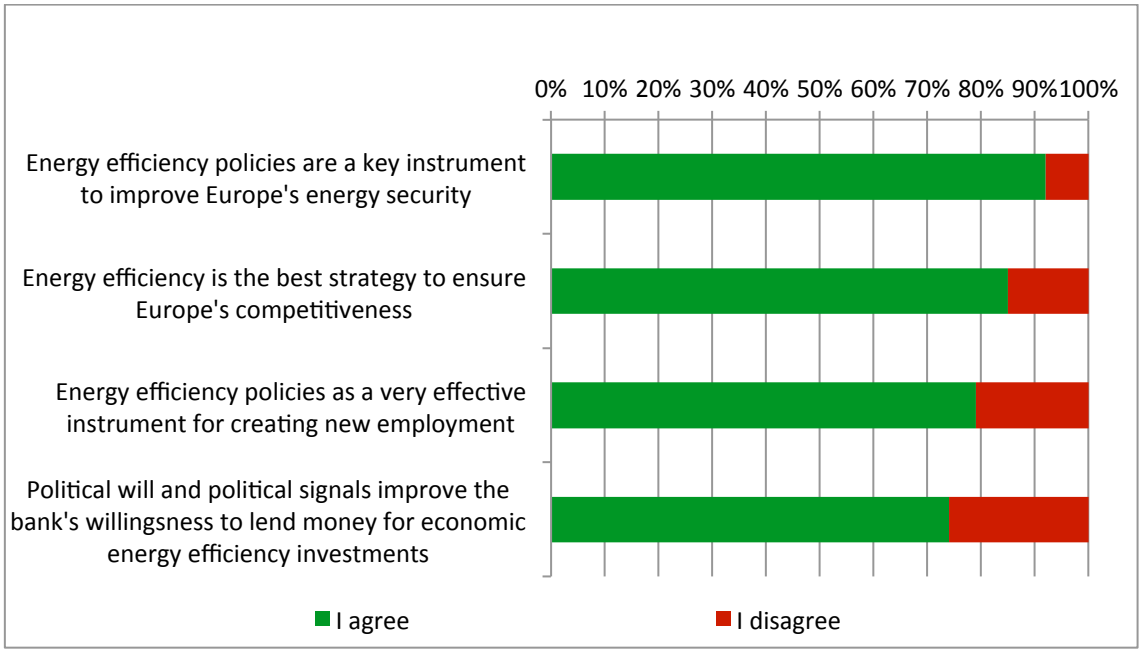
Very positive opinions were also expressed on the statement "Given the relatively high energy prices in Europe (compared to the US and Asia), energy efficiency is the best strategy to ensure Europe's competitiveness". 85% of all experts agree. Looking at

Member State level results, Luxembourg, Malta, Italy, Denmark, Slovakia and Estonia have the highest agreement levels (more than 90% agree with it). The highest level of disagreement was voiced by the experts from Finland (46% disagree), followed by the Czech Republic (32%) and Cyprus (29%).

Overall, 79% of the experts agreed with the statement "Ambitious energy efficiency policies are a very effective instrument for creating new employment". More than 90% of the experts agreed in Cyprus, Belgium, the Netherlands, France, Denmark, Romania and Spain. However, in Finland, Estonia, Latvia, Lithuania, Luxembourg and Germany, more than 30% disagreed.

The statement "Political will and clear political signals significantly improve the bank's willingness to lend money for economic energy efficiency investments" was met with approval by 74% of the experts. More than 85% agreed in Hungary, Malta, Poland and Bulgaria whereas in Estonia, 50% disagreed, followed by 43% in Belgium.

Figure 33: EU 28: opinion of the following statements



The final question asked about policy measures taken at EU level.

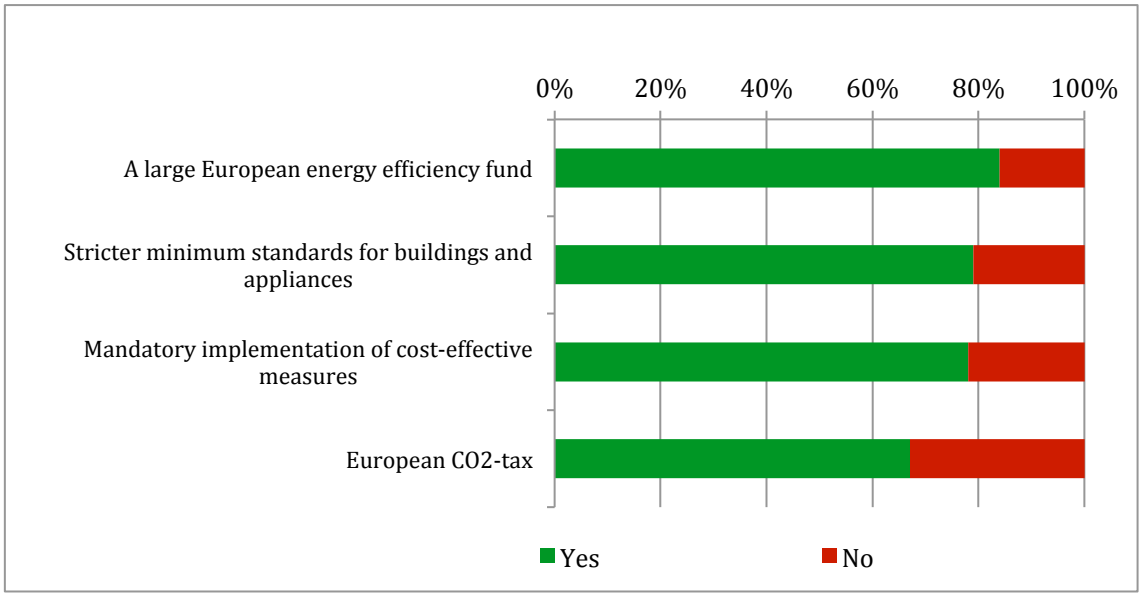
The measure that was most popular among the energy efficiency experts was "a large European energy efficiency fund (giving both grants and loans)" - 84% are in favour of it. In Cyprus, Latvia and Romania even 100% support this idea. In comparison, 50% of the Swedish experts are against it, followed by Austria (43%) and Germany (35%). Explanations for this difference in opinions include the concern from these experts that their country would pay more into this fund than it would receive out of it or that such an EU fund would replace well-established national funding programmes.

Nearly as popular among the experts were "stricter minimum standards for buildings and appliances" - 78% support this. In Bulgaria, 100% are in favour of it, followed by Romania (96%), Latvia (95%), Ireland (93%) and the UK (90%). On the other hand, 52% of the Lithuanian experts are against it.

Also the next potentially very far-reaching measure found support among the experts: 76% are in favour of an instrument to foresee the "mandatory implementation of cost-effective measures identified in energy audits in industry". The highest levels of agreement come from Romania (95% agreement), Hungary (87%) and Spain (86%). The highest levels of disagreement were from Finland (56% against such a measure), followed by Estonia (47%) and Germany (37%).

Two thirds of the experts would like to see the introduction of a European CO_2-tax. This measure has the highest support in Sweden (92% in favour), followed by France (88%), Belgium and Ireland (both 86%). By contrast, 62% of the Slovak experts are against such a measure, followed by Latvia (61%).

Figure 34: EU 28: measures which should be introduced on EU level



4 Business stakeholder consultation

4.1 Background

As a new element for the Energy Efficiency Watch 3 project, business stakeholder consultation workshops were held in Denmark, Germany, Croatia, Italy and Poland. The objective was to gather input from the business community active on energy efficiency and particularly for including their perspective in formulating the draft conclusions from the Energy Efficiency Watch 3, in view of the review of the Energy Efficiency Directive and the Energy Performance Directive.[9] The aim of the workshops was to collect feedback especially on the following points:

- What is the impact of EU policies (both at EU and national level) on your daily business?
- Do you think EE Policies lead to further costs or benefits for your company?
- What do you think should change? Are some issues not covered by EE policies?
- Article 7 of the EED: 1.5% annual savings should be implemented via policy instruments to be defined by Member States: is this article supportive or counter-productive?
- Do you consider national measures adopted to comply with Article 7 EED to be successful? Are they effectively implemented or just announced? What impact do they have on your daily business? (sales, clients, etc.)

Workshops were organised in the following countries. Below, we summarise the main statements and views of actors collected from each workshop.

Table 7: Information on business stakeholder workshops

	Title of event	Date	Organisers	Number of participants
Denmark (Frederiksberg)	Workshop on implementation of the Energy Efficiency Directive	26/03/2015	Danish Energy Association	21
Germany (Berlin)	Energy Efficiency Watch III – Ihre Stimme zur Energieeffizienz in Brüssel	27/04/2015	ECOFYS	21 (in total 39 registered)
Croatia (Zagreb)	Energy Efficiency Watch Workshop	12/05/2015	REGEA	39

[9] The section on the business stakeholder consultation has been prepared by ecofys (Daniel Becker, Sonja Foerster, Lucie Tesniere) with contributions by Dario di Santo (FIRE), Karolina Loth-Babut (KAPE), Ryszard Wnuk (KAPE), Tina Sander (Danish Energy Association), Velimir Šegon (REGEA), Julije Domac (REGEA), Tijana Šimek (REGEA).

Italy (Rome)	Workshop FIRE – Ecofys –Energy efficiency watch project III: Italian input	20/03/2015	FIRE	32 (out of 54 registered)
Poland	Energy Efficiency Watch Project III	12/05/2015	KAPE S.A.	30

4.2 Denmark

During the joint debate session which represented the main programme point, the following subjects were discussed:

- Different implementing schemes
- Integration between renewables and energy efficiency
- An individual narrative for each country
- Experience sharing
- Electrification and CHP

The main requests from the business stakeholders were the following:

1. **Create a market for energy savings (legislation)**
   - Long term legislation is needed since change of directions is making the business environment unpredictable, which is very difficult for market actors.
   - The Commission should put more stress on promoting long term legislation.
   - Create a European market similar to the Danish – draw on positive experience from Denmark. The conditions that we have created in Denmark have been very helpful to us.
2. **Remove trade barriers (technical, educational)**
   - More harmonization is wishful in order to expand business plans developed in one MS to expand across Europe.
3. **Ensure quality and additionality through guidelines**
   - Look to CO_2-world (CDM) – practice, transparency and pricing
   - Important to keep it simple
4. **Cross-border savings transactions**
   - Monitor, evaluate, adjust – level playing field
   - Price and tax instruments
   - Commercialize as much as possible
5. **Harmonize Renewables and Energy Efficiency instruments**
   - Inconsistency is hampering the market for energy efficiency
   - Markets are complementary – you have additional positive effects and options if you harmonize better.

Other remarks: Danish stakeholders are generally happy with the political framework in Denmark and consider it supportive to triggering new business models.

It is a general concern that if the European market does not keep pace it will eventually slow down the Danish development.

Many of the low hanging fruits in Denmark have been harvested, and the price of savings are rising, but that does not mean the Danish business is stagnating. Further low hanging fruits could be harvested within the context of the energy label or eco design.

There is a general need for new strategies or tools to address the SMEs.

It is important to consider how regulation could be expanded also to smaller fields of application in order to keep the market alive.

4.3 Germany

The workshop has been organised as part of the Berliner Energietage, a conference dedicated to energy efficiency in Germany which took place from 27th to 29th April 2015.

The following **statements** have been jointly **agreed on by all stakeholders** participating.

The relevance of EU energy efficiency policy is high for Germany, an economic and industrial hub:

Energy efficiency policy has an impact on all stakeholders. Manufacturers experience positive impacts, such as an increase in demand for energy-efficient products. The consultancy sector too benefits from energy efficiency polices. The more support schemes are available to customers, the higher the demand for consultancies to assist them becomes. The chemical industry, however, has an inherent tendency to conserve energy, hence they see more regulation from Brussels as often hindering their daily business. Furthermore, the requirement to implement energy audits until autumn 2015 has put companies under pressure. Summarising, EU policy has a strong impact on Germany as an economic and industrial hub, and businesses feel that the leading competitive position of the EU in the field of energy efficiency should be maintained.

Long-term programmes are necessary that allow for predictability and security:

- Investment decisions in industry often follow a long-term planning horizon. Hence, energy efficiency policy needs to provide a long-term framework that allows for predictability.
- Furthermore, national policies seem to be designed and implemented on a trial and error basis, which leads to uncertainty in the market. Actors are therefore less likely to act, but wait until a new law is passed, a directive evaluated or new targets set.

- The EU 2020 targets are a step into the right direction, yet the energy efficiency target for 2030 is low and not clear. The task of the EU is therefore, not to change EU policy after an evaluation, but to add more specific details.

Harmonisation of calculation methods and EN norms is needed:

- Especially for product manufacturers as well as global companies, different standards in EU MS and different imputation and calculation methods have a negative impact on their daily business. This in particular applies to the building sector.
- DIN18559, which deals with the calculation of the used, final and primary energy demand for heating, cooling and ventilation can be applied differently, which leads to varied outcomes. Even though national differences are appreciated, a harmonisation of norms and calculation methods is needed.

Assistance from Brussels is needed for the national design and implementation of energy efficiency policy frameworks:

The implementation of energy efficiency policies varies among MS in the EU. Especially global companies face difficulties when certain energy efficiency regulations are implemented in some countries, but not in others. Next to sharing best practices, also sharing what went wrong would help countries with a better implementation of energy efficiency policies. Additionally, participants expressed the views that:

- Brussels should assist with a definition of nearly zero energy buildings and not leave it up to the countries to decide.
- For future energy efficiency policy, the best approach is a combination of regulatory approaches with incentive programmes which will facilitate quick results. Furthermore, issues around demographic change should be included into the design of energy efficiency polices and more incentivised on an EU level.
- Another aspect where more input from Brussels is needed is energy advice. A framework for energy advice should be given which defines a list of requirements and criteria for energy advice. This would help with quality control in the MS.

Less complexity and more efficiency of the different directives is needed:

Enough directives are existing in the EU. Yet, the crucial point is that having several directives seems to be counterproductive. One example are the EBPD and the EED and the national implementation in Germany. While the EED actively calls for energy services, the EBPD leaves this open and only regulates the implementation of energy performance certificates. Synergies between the different directives should therefore be increased. Moreover the combination of EU directives and national instruments sometimes leads to confusion as they seem to have different aims. One example are new buildings which have to follow very high standards, yet the existing building stock is not addressed as much.

Assistance from Brussels for market observation is necessary:

Especially for energy efficiency products and services, market observation is key. Setting up effective and usable databases, as well as facilitating cooperation among MS should be encouraged by the EU.

4.4 Croatia

The Energy Efficiency Watch Workshop was organised within the framework of the 6th Zagreb Energy Week. This is a traditional, well-known series of events which comprises all the topics related to energy efficiency, renewable energy sources and energy policies in order to promote sustainable development.

During the workshop, participants pointed out a few obstacles which are important to overcome to achieve better results in project and business development on energy efficiency. **According to their opinion**, the EPC contracts should be better regulated, verification of energy savings should be more detailed and precise, institutional elements must be better defined (for 1,5% annual savings target), Croatia must follow good practice examples of more developed European countries and the issue of low energy prices should be solved through subsidies of national and international funds. Furthermore, it was pointed out that the business sector should form associations or clusters (good examples are associations in the building sector) for better competitiveness on the market as well as apply for grants and financing of SMEs and large companies. They emphasized the incapability of companies and citizens to finance these kinds of investments. In that field, they see the solution in public-private partnerships.

As one of the most important measures of energy efficiency implementation, participants emphasized raising awareness with the general public through education from an early stage (preschool and primary school) and starting from their own business and living habits. It is important that the benefits of energy efficiency measures implementation are not only shown through energy and financial savings but are also put in a wider context (impacts on economy, tourism, industry).

The main requests from the business stakeholders were the following:

- More precise and detailed translation of Energy Efficiency Directive into national legislation (e.g. clarification on how the 1.5% energy saving target is distributed among energy distributors and suppliers.) Participants think that the major problem with these kind of laws and regulations is the incorrect translation into national law and in that specific context, the incorrect drafting of regulations;
- Energy statistics on consumer level should be more detailed and accessible (to every building- public and private sector, citizens).
- The ESCO market should be defined and established (e.g. clarifications of the conditions of the transfer of investment risks from public institutions to ESCO contractors with guarantees of energy savings.) Currently in Croatia, the ESCO

market is still in its early stage. There are several ongoing pilot projects. People are afraid to invest in such projects, as they don't know how to do it. The initial investment is the problem: Contracts should be better defined (by using templates for instance), energy saving shouldn't be measured by the project (estimation), but by the real energy saving measurement during the project lifecycle. Relations between the contractors and responsibilities should be better defined within the contracts.

- Grants and subsidies (e.g. feed-in tariff etc.) should be transparently planned and established for a longer period of time. Currently in Croatia, most grants and subsidies are periodically available. Hence, they are not equally available to the general public and to the private sector. Tenders are also usually drafted for public institutions (in terms of eligible applicants) so there is a large potential for expanding these kind of tenders to private sector and private households;
- A wider group of stakeholders should be included in policy making and development of legal documents on national level.
- All laws and regulation related to energy efficiency should be coordinated and coherent. There is a large inconsistency between related laws and regulations and hence a need of harmonisation. This applies for instance to laws related to taxes and to the development of EE projects: Tax payments, according to the financial law imply that taxes are paid at the end of implementation of a project, but according to the law on Energy Efficiency, taxes can be paid in regular instalments over the next 10 years. This inconsistency causes misunderstandings among investors.
- New and innovative financial mechanisms should be developed (public grants and applications are open e.g. every 3-4 months. They should be open all year-long, not just every 3-4 months. Usually, they are meant to public institutions: they should be open to private companies as well). There is also a need for new forms of subsidies and grants to be developed through Croatian Environment Protection and Energy Efficiency Fund, commercial banks, public-private partnerships etc.
- New instruments for local and regional competitiveness (e.g. green public procurement) should be developed and implemented – participants highlighted green public procurement as a good way to promote buying "green" equipment and services and encouraging local producers and economy.

4.5 Italy

The workshop has been organized as part of the FIRE annual Conference on the Italian white certificates scheme in Roma on the 20th of March 2015.

The **main requests from the business stakeholders** were the following:

- Information and training campaigns are needed, both to let end users know the opportunity to invest in energy efficiency, to qualify companies offering energy

services, to facilitate the diffusion of competences among banks in order to facilitate TPF for small and medium size projects.

- Policies in order to be efficient need to be continuative and must be created to last for a long time.
- It is important to quantify also the non-energy efficiency related effects of energy efficiency actions (such as improvement in the core business, O&M, environment, living standard, etc.). This will make energy efficiency projects much more interesting for the investors. The Commission could help to estimate these effects.
- It is important to support the exchange of best practices at EU level.
- The spending review policy of the EU Commission had a very bad effect on energy efficiency policies especially in the public sector. For this reason, investments in energy efficiency actions should not be considered as part of the public budget. More generally, EU policies asking for spending reviews should always be mixed with policies capable of supporting the development of affected national markets, in order to avoid a cross effect that makes it almost impossible to invest in order to achieve the EU set targets.
- In order to avoid a different treatment and different costs among MS, it is suggested to consider the introduction of some flexibility clauses in EU directives. According to the different MS situations a range and not a definitive value of timing and targets should be given to MS for particular measures.
- Regarding financial instruments (like EIB's ELENA, for example) it would be helpful to have the chance to apply to financial policies with lower entering barriers and bureaucracy to get the financing. A guarantee fund dedicated to facilitate TPF for ESCOs and end users within EPC frameworks could be a very effective tool for diffusing energy efficiency.
- Alternatively, a platform to aggregate small and medium energy efficiency projects could be introduced to channel resources available among investment funds and banks that presently are blocked due to the size of the projects that are too small for project financing techniques.
- Support schemes for long payback time projects could be introduced to support building renovation and medium term industrial investments.
- More instruments are needed for buildings, and this is true especially for Southern EU countries that have different needs and require different approaches with respect to Central/North Europe MS (whose requirements policies are often based on). The active participation of all EU countries should be assured when policies are designed, or more flexibility should be allowed on the approach to energy efficiency and the solutions to be adopted for such MS.
- Protocols like IPMVP should be promoted to facilitate EPC contracts and TPF involving entities operating in different MS.
- Regarding the labelling of building envelope solutions, it would be more desirable to have EU standards and parameters.

4.6 Poland

The workshop in Poland was divided into two sessions. The first session was a discussion on the impact of EU Energy Efficiency policies on Polish companies that offer products and services in the field of energy efficiency. The second session was to identify and agree on key findings from the first session to be presented to the European Commission in further EEW documents.

The **main requests from the business stakeholders** were the following:

- The awareness of the necessity and the benefits of improving energy efficiency increases, however more slowly than the knowledge on opportunities for improving energy efficiency. There is still a need for technical culture and increased awareness of energy efficiency improvement opportunities (knowledge concerning energy efficiency solutions, priorities in choosing and adaptation of energy efficient equipment, keep using technical facilities with the respect of energy savings, demonstration of energy conservation life and work styles, etc.). There is a lack of information on the availability of various resources and funds. What is required is a wide and constant education programme in this area.
- The potential for improving energy efficiency is significant, and improvement is also impressive (measured by top-down indicators), but improvements are mainly due to market forces, and not due to central regulation and support such as the white certificates scheme.
- Distributors raise the issue of relatively low energy prices (although final consumers consider it not to be low).
- A significant barrier for improving energy efficiency in the construction sector is a low level of awareness and the developers' lack of knowledge.
- Energy companies are not interested in energy efficiency.
- In the public mind, energy efficiency is expensive and a "toy" for the rich.
- Energy efficiency improvements in industry are a result of competition mechanisms, rather than the stimulation of support programmes, with energy efficiency improvement investments at the edge of cost-effectiveness.
- The State acts as a "brake" through the tax system, by imposing high taxation of granted subsidies and a reluctant approach to energy efficiency support mechanisms lowering the taxes.

Opinions on regulation - white certificate scheme:

- The white certificate scheme is too centralized. The law is not suited for individual users. The obliged entities are not interested in energy efficiency improvement.
- The existing white certificate scheme is absolutely inefficient due to the following reasons:

a. not clear allocation of the substitute fee, not necessarily on the energy efficiency purposes, and its inhibitory effect on market forces,

b. lengthy process of evaluation of applications, due to the lack of detailed list of undertakings eligible to obtain white certificates and a large number of documents necessary for the submission of applications,

c. clear resistance by the implementing authority (Energy Regulatory Office), caused by insufficient budget to operate administrative service of the system,

d. difficult, confusing for potential beneficiaries' procedures.

The effect is that distributors include the substitution fee in the price. It is a mistake to direct funds from the substitution fee to the National Fund for Environmental Protection and Water Management.

- Distributors inhibit energy efficiency improvements.

Recommendations set by participants:

- Creation of a National Fund for Energy Efficiency.
- Removing legislative disarray.
- Introducing a real exemplary role of the public sector, which is currently lacking.
- Energy efficiency should be implemented in public procurements.
- Deliberate targeting support systems on areas of poverty, suffering from lack of funds for energy efficiency improvement.
- Implementing innovative models of energy supply.
- As a result of the above, energy efficiency improvement should be a continuous business process.

5 Feedback from the local and regional level

Subnational levels of governance play an important role in facilitating energy efficiency in the EU, which is more closely depicted in Chapter 5.1 including the relation between the different levels of governance *vis-à-vis* energy efficiency policy making or action. In this respect, it turns out that EU regulations drive local energy efficiency activities to a major extent. Nevertheless, strong barriers such as access to financing persist and exacerbate local level action as pointed out in Chapter 5.2. Afterwards, selected good practice examples of local level action are provided followed by options to enable local policy action towards facilitating energy efficiency via European legislation. This chapter concludes with some final remarks and recommendations on adjusting policy frameworks in order to sustain and improve local policy making. The information and conclusions presented in this chapter have been compiled by Energy Cities, the European Association of local authorities in energy transition and Fedarene, the European Federation of Agencies and Regions for Energy and the Environment (both EEW3 project partners) and are based on the viewpoints and experiences of their association members.

5.1 The impact of EU energy efficiency policies on the local and regional level: the viewpoint of local and regional authorities

Local authorities are the primary actors to carry out energy efficiency policies and actions. Being closest to their citizens (the end consumers or prosumers) they can lead by example and motivate them to take action on energy efficiency (or to support the energy transition through implementing energy efficiency measures and behaviour. Local authorities are the ones, who set the frameworks; as *suppliers of energy* (district heating or cogeneration), as *consumers* (in public buildings) and *local regulators* (e.g. housing energy efficiency standards when providing construction permits). These roles are either driven by national and EU legislation, or in some pioneering cities, are carried out even more ambitiously than mandated by European legislation, in particular by those local authorities which have signed the Covenant of Mayors.

In more decentralised countries, especially in Scandinavia, local authorities are well empowered to set local energy policies and manage their public facilities. As a result, they are often ahead of EU and national policies and are pioneering in energy efficiency policies and actions. Växjo and some other cities in Sweden have, for example, set a goal and are on track to become fossil fuel free by 2030. Further, they already introduced the passive house standard for any new building constructions.

In rather centralised countries though, especially in Central and Eastern Europe, local governments possess lower or even no authority in terms of energy management and face an unfavourable, politically populist national legal framework (e.g. a national policy focus on reduction of energy prices or provision of fossil subsidies – highly contradictory to any action on energy efficiency)

In some Member States (e.g. in Hungary, Cyprus and Poland), interviewed experts also indicated that the EED had been the sole driver for the introduction of energy efficiency measures or EU funds being the only source of energy efficiency investments. The Energy Efficiency Directive is of crucial importance in order to focus attention specifically on reducing energy demand, complementing supply side concerns and enabling a more sustainable and balanced long-term perspective.

The key contribution of the Energy Efficiency Directive is in setting clearly defined energy efficiency goals and targets (such as the 3% renovation rate), defining obligations and requirements as well as establishing a framework of measures to achieve the energy efficiency target of the EU. Clear saving targets for Member States have significantly increased the efforts and focus towards a higher energy efficiency and stimulated discussions, investments and activities in all countries.

In order to achieve the targets, the long list of standardised categories of exemptions should be removed from all articles, including the possibility to count energy savings achieved in the past. Exemptions should be accepted only in very rare cases, e.g. for specific historic buildings (Article 5 EED). These might instead be presented in the form of an appeal, which needs to be fully justified, so making it more difficult to obtain an exemption than to comply.

According to viewpoints from the local and regional level, the national energy efficiency target should be broken down by sector. This could result in specific national plans, which in turn should be devolved to the regional and/or local level. While this is already the case in some countries, including it as a requirement would make this practice more widespread. By specifying this in the EED, regional and local bodies would gain a greater authority to set their own targets and plans and be able to monitor these effectively – for example by obtaining data from the industry, including energy network operators.

5.2 Barriers to energy efficiency investments on a local and regional level and policy recommendations

Implementing any local energy efficiency policy and/or action requires interest and ambition; i.e. local authorities should be empowered and motivated to become engaged. However, distorted ownership structures and shared (unclear) management responsibilities (e.g. between national and local governments), such as a counterproductive institutional, political and financial framework (e.g. distorting subsidies or incentives) can produce an unfavourable environment for the local implementation of energy efficiency policies.

Suitable policy instruments to address specific market barriers to energy efficiency such as a higher risk, longer economic payback periods or small dispersed projects are often missing on the national level, but are essential to trigger significant investments.

More specifically, Energy Cities recommended in its response to the public consultation of the EU Commission on the Energy Efficiency Directive[10] that in Article 7 of the EED requirements should be included to develop a phase-out plan for fossil fuel subsidies. Instead investments could be redirected to energy efficiency programmes in socially vulnerable areas. The EED should provide universally valid and workable definitions and mechanisms to push for dedicated programmes from Member States in tackling energy poverty via increased energy efficiency measures. The Commission should help Member States implement Article 7.7a which states that “Member States may include requirements with a social aim in the saving obligations." Without specific rules in Article 7 focusing on energy poverty, most energy efficiency projects will go to the building owners who are able to take on additional debt. The sub-national level plays a crucial role to detect and take action on energy poverty by creating synergies between their social inclusion strategies and sustainable energy programmes.

Major barriers to implementation of energy efficiency measures remain the access to available financial mechanisms, bureaucracy and a lack of exchange of best practices between countries. Where funds are already available, energy efficiency projects should have the chance to become bankable more easily. In Germany, for example, specific banks are providing guarantees against default for energy efficiency projects of energy service companies, which otherwise main banks would not be willing to finance. An EU-wide promotion of such a guarantee scheme would help strengthen energy service models as a key instrument in tapping energy efficiency potentials. Additionally mechanisms to aggregate investment projects (for example through energy agencies) that are too small to be eligible for funding should be promoted.

In many countries also large-scale energy efficiency funds are still needed. There should be a combination of public and private funds, with energy performance guarantees; a smart combination of initial (seed) funding, loans, own contributions, crowd financing, including mechanisms to minimise the risks of the latter. Funds can be obtained and market messages can be given, through taxes on fossil fuels, CO_2 and nuclear energy (for long terms costs to society of waste storage and disposal, security, insurance, decommissioning). Subsidies to fossil fuels should be eliminated.

In any case, financing mechanisms need clear, transparent access rules. To sustain over the long-term, intelligent programmes should be continuously adapted in order to take changing conditions and lessons learned into account. Ideally the existing energy efficiency and construction industry should be engaged to ensure a long term impact and to avoid creating ‘boom and bust’ markets. For example, if general building industries would be involved in renovation and repair work and can access funds for energy efficiency, they can realise ‘trigger point’ opportunities by including energy efficiency in their renovation offers.

[10] For more information, see: http://www.energy-cities.eu/Review-of-Energy-Efficiency

5.3 Selected good practice examples on the local and regional level induced by the European policy framework

To reach EU climate and energy targets, regions and local authorities play an important role, especially as the EU is encouraging regions to develop and implement energy and climate change mitigation strategies, through initiatives such as the Covenant of Mayors.[11]

Nearly 7,000 municipalities, which committed to the Covenant of Mayors, are carrying out sustainable energy actions in their SEAPs / SECAPs supporting the implementation of European energy efficiency policies.

In the city of Riga, Latvia, for instance, local heat producers are fully implementing their 1.5% annual energy savings obligation according to Art. 7 EED, which according to officials from the local energy agency, has boosted the local economy and enhanced the environment. In addition to this, citizens in Riga have had a beneficial impact on their energy bills in form of lower expenses due to the energy efficiency obligation being taken up by local heat producers.

A significant number of regions created regional financial tools:

- The Region of Hauts-de-France (former Picardie region merged with Nord-Pas de Calais in France) started a third party financing experimentation through the creation of a public ESCO - Public Service for Energy Efficiency – with the following main characteristics:
    - Use of ERDF and ELENA's technical assistance for an innovative scheme;
    - State-owned company experimenting with Third Party Financing;
    - Sustainable refurbishments of buildings;
    - Budget range of the pilot phase: €65,9 M.][12]
- The semi-public ESCO (Société d'Economie Mixte) Energies POSIT'IF in Ile de France addresses many of the obstacles to deep renovations. Investments in deep renovations are however essential to achieve the European Union's energy and climate objectives for 2020 and 2050. Indeed, condominium home-owners are deterred from taking on debts for energy renovations because of the long payback times of deep renovations. The creation of this semi-public ESCO, through its comprehensive offer covering both technical and financial aspects, aims at addressing this issue. The financing structure is as follows:
    - Owners' self-financing (including individual loans): 50%;
    - Grants (including white certificates) pre financed by Energies POSIT'IF: 15%;

[11] The Territorial Coordinators of the Covenant of Mayors support municipalities for the Baseline Emission Inventory via the creation of Energy & GHG Emission Observatories (www.data4action.eu & recommendations) and, provide assistance in the writing of SEAPs for some municipalities.

[12] For more information on this good practice example, please check: http://www.fedarene.org/wp-content/uploads/2015/07/150608-SPEE-fact-sheet-UK-HD.pdf

- TPF from Energies POSIT'IF: 35% (before the French banking authority removed the authorisation).[13]

- Kilkenny was one of the first cities in Ireland to implement Energy Performance Related Payment (EPRP, a form of EPC) to refurbish street lighting representing around 55% of the municipality's electricity consumption. A substantial number of lamps including historical and modern lanterns were converted to LED technology in the city.[14]

5.4 Enabling local and regional authorities for implementing the EED, EPDB and NEEAPs

Local authorities need an appropriate, empowering national political and financial framework in order to be able to deliver their local SEAPs/SECAPs, which could then contribute to / add up to the delivery of the NEEAPs. Such an empowering framework includes assigned authorities (responsibility and legitimacy) and sufficient human and financial capacities for action.

The EED represents such a comprehensive legislative framework for 2020 and beyond, including EU and national targets and minimum requirements for national programmes and measures. The Directive builds on the EU efficiency standards for products, buildings and vehicles and has significantly increased national activities, strategic thinking and investments in energy efficiency improvements. But, to be truly effective and put the necessary pressure upon Member States to develop adequate supporting mechanisms, the EU's energy efficiency ambition ought to be transposed into individual binding targets for each Member State

The EED drives the creation of new national energy efficiency legislation and strengthens existing legislation, such as the work towards the third NEEAPs. The increase in the number of Energy Efficiency Obligation Schemes in the EU is a clear indication of the role of the EED in driving the national legislation. Nevertheless, it should emphasize the need to create an energy efficiency vision for post 2020 even more. In addition, the EED implementation has helped to establish, maintain and increase national financing instruments, for example, additional capacities for KfW in Germany and the Dutch government support for Zero Energy Homes at Zero Upfront Costs (Stroomversnelling).

[13] For more information on this good practice example, please check http://www.fedarene.org/wp-content/uploads/2014/07/31_Île-de-France-Region-FR-–-Semi-Public-Company-"Energies-POSITIF".pdf

[14] For more information on this good practice example, please check http://www.fedarene.org/best-practices/kilkenny-city-lighting-project-16515

Several measures[15] could be followed in order to provide the regional and local authorities with the necessary context, drivers and build a momentum for the implementation of this legal framework:

1. Easier access and smarter use of European Structural and Investment (ESI) Funds
2. A more energy efficiency considering interpretation of public debt rules[16]
3. An improved and multiplied offer of Project Development Assistance
4. Energy prices need to be transparent and predictable within a completed and regulated EU internal energy market
5. Maximising the use of the European Fund for Strategic Investments
6. Creation of a unified European legal framework for crowd investing
7. Raised awareness at the decision making level
8. Dissemination of successful projects to support replication
9. Capacity building and standardisation in innovative energy efficiency financing
10. Encouraging adaptation of public procurement procedures

Signatories of the Covenant of Mayors endorsed in 2015 the implementation of the EU 2030 targets via their Sustainable Energy and Climate Action plans, with a strong focus on energy efficiency measures and policies. Hence the EED review should also reflect this, and EU and national policies should also create their post-2020 vision, including quantified national energy efficiency targets. Energy Cities, for instance, also proposed to include a special chapter dedicated to the local energy transition, with special regards to local heat production and co-generation.

More transparency and accountability in the work of local utilities – especially in their billing and metering practices and provision of consumption data for municipalities (e.g. for their SECAPs) would be desirable, too.

Several Regions, Energy Agencies and FEDARENE summarised policy recommendations for EU and national policy makers on improving the access and collection of energy data for sustainable energy planning by sub-national public authorities.[17]

[15] For more information, please check: http://www.fedarene.org/wp-content/uploads/2016/04/PR-Reg-Financing-final.pdf

[16] For more information, please check: http://www.fedarene.org/wp-content/uploads/2016/04/Letter_EPC_ESA_ITREMEP_Final_08042016.pdf

[17] For more information, please check: http://data4action.eu/wp-content/uploads/2016/02/D4A_EU-Recommendations_vf.pdf

At the European level, recommendations can inform the review of Directive 2012/27/EU on energy efficiency that focuses on Articles 1, 3, 6, 7, 9-11, 20 and 24. They also consider Directive 2009/28/EC on renewable energy, Directive 2010/31/EU on energy performance of buildings, Directives 2009/72/EU and 73 on internal markets in electricity and gas, Directive 95/46/EC on the protection of personal data, Directive 2007/2/EU on Infrastructure for Spatial Information in the European Community (Inspire), Regulation (EC) No 1099/2008 on energy statistics.

The effective transposition of the above listed EU directives is key for improving data access for sustainable energy planning. Additional measures are proposed by data4action, an initiative that promotes the establishment of long-term data exchange models in sustainable energy planning, through a cooperation between public authorities and energy data providers. The proposed measures could be implemented by Member States directly in national legislations, in order to facilitate access to energy data for sustainable energy planning.

6 Case studies

This section presents a summary of ten Case Studies of Remarkable Energy Efficiency Policies analysed in the EEW3 project.[18] The selected ten EEW3 case studies of good-practice are shown in Table 8. The case studies serve as good examples and illustrative ways for innovative energy efficiency policy making in European countries and add new, illustrative insights to the European energy efficiency policy making debate and lessons learned for future processes. Moreover, they may provide inspiration for the development of new innovative and ambitious policies and may trigger the transfer of similar policies to other countries.

Table 8: The EEW3 case studies of good practice

Case study	'Sector'	Type of policy
The Energy Efficiency Obligation Scheme in Denmark	Governance framework	Energy efficiency obligation scheme
The Energy Manager Obligation and White Certificate Scheme in Italy	Governance framework AND industry	Energy efficiency obligation scheme AND Regulation
The Sustainable Public Procurement Programme in the Netherlands	Public sector	Public procurement
The Danish Building Code	Residential - Buildings	Minimum energy performance standards
The KfW Programme for energy efficiency in buildings in Germany	Residential - Buildings	Grants AND financing instruments
Energiesprong (Energy Leap) in the Netherlands	Residential - Buildings	Demonstration projects AND information
The Nordic Market Surveillance on Eco-Design and Energy Labelling Directive (Nordsyn)	Residential - Appliances	Minimum energy performance standards
The Slovak Energy Efficiency and Renewable Energy Finance Facility (SlovSEFF)	Industry, Tertiary, Agriculture AND Residential - Buildings	Economic incentives for investment
The Irish Large Industry Energy Network	Industry	Support for advice and audits
The Car Registration Tax in Latvia	Transport	Economic incentives

The case studies had been selected taking into account the following criteria:

- Innovativeness/ uniqueness/ level of ambition of the policies
- Level of achieved energy savings in relation to the saving potential of the target sector and cost-effectiveness

[18] A detailed description of the case studies is available at http://www.energy-efficiency-watch.org/index.php?id=213.

- Promising ways for addressing existing barriers to energy efficiency
- Transferability to other EU Member States
- Coverage of different types of policy instruments, sectors, and EU Member States

Several experts supported the selection of the case studies in a special session at the eceee summer study 2015, in which a long-list with many potential candidates for EEW3 case studies was presented and discussed.

All policies have been in place for several years. Their combination of innovative approaches and proven policy practices have significantly contributed to energy savings. There may always be similar policies in other EU Member States (cf. chapter 2). If there were several similar policies, the selection was made based on the objective to present case studies from a diversity of Member States.

6.1 The Energy Efficiency Obligation Scheme in Denmark

The overall target of the Danish government is to reduce total greenhouse gas emissions in Denmark by 40% by 2020 compared to 1990. Furthermore, Denmark aims to have an energy and transport system based on 100% renewable energy sources by 2050. Energy efficiency is key for achieving both targets.

The Danish Energy Efficiency Obligation (EEO) promotes cost-effective energy savings in all end-user sectors of the Danish economy. Denmark has a history of providing energy audits and advice to customers by energy distribution companies dating back to the 1990s (Bundgaard et al. 2013). The EEO was therefore able to pick up on existing standard reporting templates. The combination of setting mandatory targets for the energy supply industry at a far earlier stage than other countries, the tradition of standard reporting templates and the freedom to choose measures to implement represents the major success factor of the EEO. In 2013, the majority of energy savings were realised in industry (44.42% of all savings achieved) and the household sector (30.79%) across all distribution companies (ENSPOL 2015).

The most particular feature of the Danish EO scheme, however, is the **size of the target**: energy companies have to achieve savings of **more than 2%** of the energy consumption of their customers **each year**.

The EEO was set up as an agreement between the Danish energy distribution companies and the public authorities (primarily the Danish Energy Agency (DEA)). It allows the targeted companies to choose freely measures they consider most cost-effective, as long as the effect of energy savings can be documented. Most common measures are advice and subsidies, or a combination of both, to realise energy savings in enterprises and households.

To calculate the savings for target achievement from the annual savings of an enterprise or household, a simple weighting factor is applied, which reflects the savings' lifespan, the impact on primary energy consumption, and the expected CO_2 impact. A

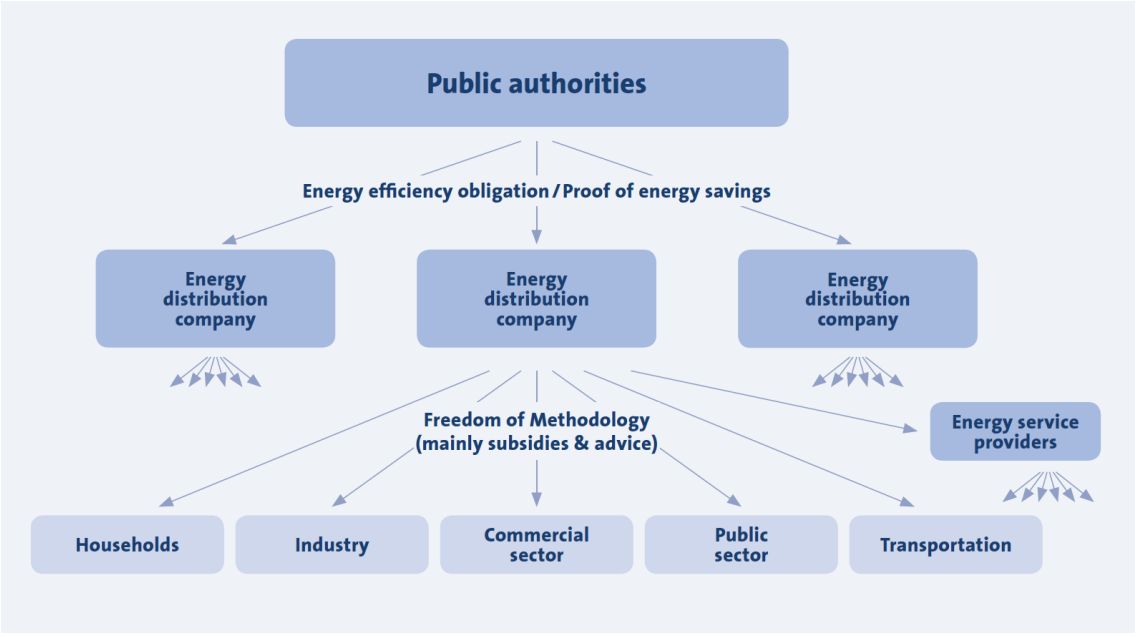
further objective is the promotion of BAT, wherever possible. The main barriers to achieving energy efficiency improvements addressed by the agreement are knowledge and information barriers, economic and financial barriers, and a lack of interest and motivation in energy efficiency improvement.

They were addressed by a successful combination of:

- information and awareness raising campaigns;
- targeted advice and financial incentives to energy company customers;
- a legal Energy Efficiency Obligation of energy savings for energy network or fuel distribution companies;
- allowing costs for achieving energy efficiency savings to be included in the network tariffs (bigEE 2013).

The following flow chart summarises the main elements of the Danish EEO.

Figure 35: The Danish Energy Efficiency Obligation (Fraunhofer ISI et al. 2014)



The current monitoring system requires companies to submit annual reports on their actual energy savings to the trade associations, which then submit them to the DEA. Quality assurance is required to be implemented by the companies to ensure that energy savings are determined and implemented in accordance with the framework. In addition, DEA conducts an annual spot check across all involved companies.

6.2 The Energy Manager Obligation and White Certificate Scheme in Italy

Italy is one of the largest emitters of greenhouse gases in the EU. In the 1990s, the industry sector was responsible for approximately one third of the energy consumption

in Italy. To address this issue, an obligation scheme for the industrial sector has been implemented. Since 1991, it is mandatory for companies with an energy consumption of more than 10,000 tonnes of oil equivalents (toe) per year to appoint an energy manager. For other organisations, such as public administrations, the threshold is 1,000 toe per year. The energy manager's task is to monitor and control the energy consumption, to establish an energy balance and to reduce the energy demand. The managers receive regular training. In 2010, the number of energy managers reached 2,650. According to FIRE, an Italian organisation representing the interest of the energy managers, it is possible for companies to save 10-15% of energy simply with an intelligent organisation of operations. However, in the past, it was often difficult for energy managers to get approval for investments in energy efficiency. After a slow start, the obligation scheme has helped to bring about new energy efficiency actors, namely project developers that are now active in the Italian market.

In 2004, Italy introduced (as the first country worldwide) the White Certificate Scheme[19], a special form of an Energy Efficiency Obligation scheme. Today, all distribution network operators of electricity and natural gas with more than 50,000 connected consumers are obliged to reach quantitative goals of primary energy savings, expressed in toe. Distribution companies can meet the targets either by implementing energy efficiency projects that benefit their customers, or through the purchase of White Certificates produced by other participants. The certificates are not only given to the obligated parties, but also to voluntary participants. These are distributors with less than 50 000 customers, energy service companies, entities required to appoint an energy manager, entities which have voluntarily appointed an energy manager or entities that have implemented an energy management system conforming with ISO 50001.[20]

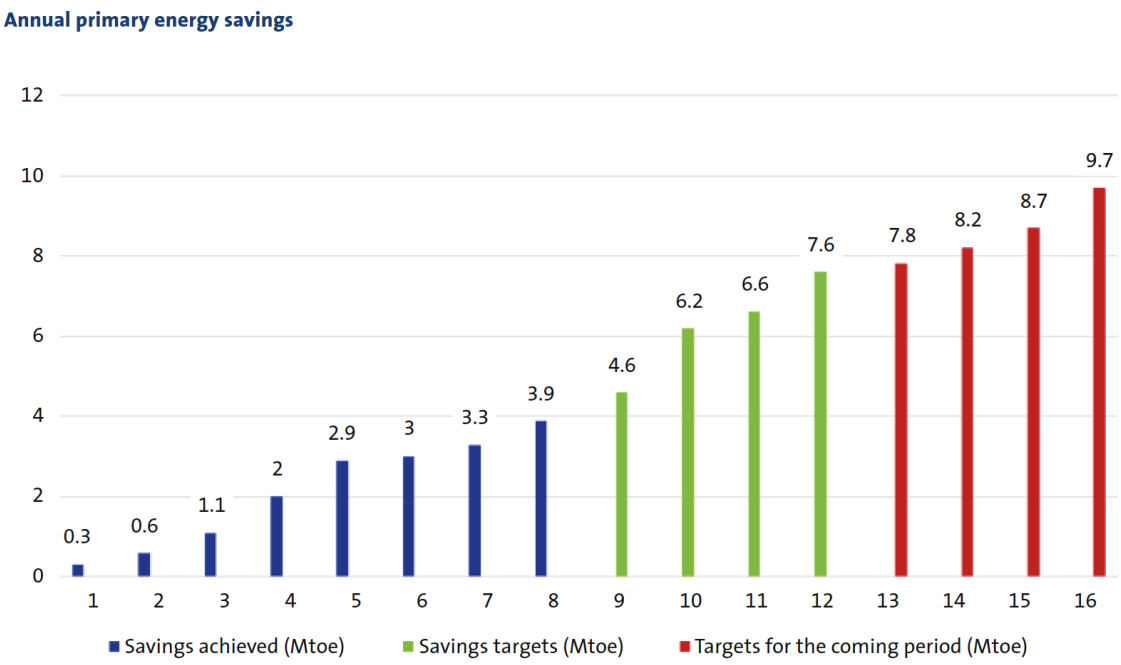
The total expected energy savings by 2020 for 2011-2020 are 5.45 Mtoe per year.[21] To achieve the savings, a large number of projects are eligible. The aim is to increase energy efficiency with technical improvements, to replace old and inefficient products and to use the best available technologies (BAT). An implementing body must approve the projects. Projects are i.a. the replacement of the lighting system, the insulation of walls and the promotion of combined heat and power generation systems (CHP systems). Through the promotion of BAT, manufacturers have an incentive to develop and produce energy-efficient products. According to the Ministry of Economic Development, from 1 January to 31 October 2013, more than 14 000 projects were completed and 5 million White Certificates were issued. From 2005 until 2014, 6 Mtoe of additional savings were delivered at a cost of EUR 600 million per year (Di Santo et al. 2014). Particularly in the years 2013 and 2014, the total impact more than doubled due to design changes made. The majority of savings and certificates now originate from the industrial sector. This is the unique feature of the Italian White Certificate

[19] Ministerial Decrees of 20 July 2004.
[20] Italian Energy Efficiency Action Plan 2014.
[21] Italian Energy Efficiency Action Plan 2014.

Scheme: it achieves synergies by closely linking the two obligation schemes, the White Certificate Scheme for energy companies and the energy manager obligation for medium and large energy consumers.

The next figure shows the annual primary energy savings achieved since the introduction of the scheme and those forecast up to 2020.

Figure 36: Past and forecast annual primary energy savings under the White Certificates scheme (Ministry of Economic Development 2013)



6.3 Sustainable Public Procurement in the Netherlands

The policy goal of Sustainable Public Procurement in the Netherlands is to ensure that public procurers, despite working under tight budget constraints, consider the lifecycle costs and not only the purchase price of products and services. Sustainable production is often not yet competitive compared to regular production in terms of the purchasing price. The market may, therefore, not lead to a transition towards a green production on its own, or at least leads to a delay of the transition.

Rules for Sustainable Public Procurement are meant for central, regional and local governmental purchasers. They apply to all purchases made of products and services in the 45 product groups and therefore impact all government suppliers. These groups cover a very wide scope, from appliances (audiovisual, vending machines, hardware, printing services) to construction work (office construction and demolition), sewerage and water treatment related works and services, furniture, catering, vehicles and cars, paper and postal services, and networks and telephone services.

The general legal framework is provided by the Public Procurement Act of 1 April 2013. Since 2014, "PIANOo" (Professional and Innovative Tendering Network for Government Contracting Authorities), which used to be the tendering expertise centre for the government, has become the central contact point for Sustainable Public Procurement (SPP) for all Dutch public procurers. Acting as the Public Procurement expertise centre, its goal is to professionalise procurement and tendering in all government departments in order to improve efficiency and compliance with the rules. In order to do so, PIANOo provides active support to procurers in order to accelerate the fulfilment of SPP and its professional application within government procurement services. Its expertise is built up through a large network of around 3,500 public procurement professionals and contracting authorities.

The legal framework for sustainable public procurement is in place since 2013 only, and the implementing authority PIANOo since 2014. Therefore, an overview of impacts and achievements of the policy does not exist yet. Detailed environmental criteria documents have been drawn up for 45 product groups that have been selected because they are commonly purchased by government bodies and have a significant environmental impact (such as service cars and vehicles, construction works or appliances). They include both minimum requirements and award criteria, i.e. a list of weighted criteria that should be the basis for the selection decision of the products and services (although the public purchasers have some freedom regarding the weighing). Suppliers must meet the minimum requirements to be eligible for a public purchasing contract. Based on the award criteria, suppliers can be encouraged to further improve their environmental performance. Implementation of the minimum requirements contained in the environmental criteria documents is mandatory for all central government procurements. Other government bodies have indicated that they will implement the minimum requirements set out in the environmental criteria documents as standard by 2015. As a result, all procured products and services from these 45 product groups now meet minimum standards, and may even go beyond them, which has improved the sustainability of government used products.

6.4 Danish Building Code

As part of its overall energy efficiency policy package, Denmark has also introduced ambitious targets for new buildings contributing to the overall climate objectives. These targets are directly linked to the Danish Building Code and the future energy efficiency requirements "class 2015" (BR15) and "class 2020" (BR20). Buildings constructed according to the "class 2015" have an overall energy performance that is reduced at least by 50% compared to 2006. The BR20 level was developed to meet the Energy Performance of Buildings Directive's requirements of nearly zero energy buildings (Danish Building Research Institute 2013). Buildings constructed according to the BR20 have a reduced energy consumption of at least 75% compared to 2006 (Danish Energy Agency 2014). The long-term vision of the Danish government is to build only 'plus-energy-houses' (IEA 2011; Aggerholm et al. 2010).

Barriers addressed by the Danish Building Code are the lack of interest and motivation in energy efficiency improvement and the lack of knowledge and information. For a majority of actors, energy costs are small compared to other costs and possible cost savings are therefore too small for being a strong incentive to invest in energy efficiency improvement measures. The Building Code enforces a minimum level of energy savings. This also reduces transaction costs such as information and search costs. Building regulations also help to overcome developer-buyer and landlord-tenant split incentives.

According to an evaluation by Energy Analysis, Niras, RUC and 4-Fact published in December 2008 (Energy Analysis et al. 2008), the building code in Denmark is of great importance for the reduction of energy consumption in new buildings. Even though predetermined energy requirements were not always met in the past, it is innovative that Denmark has a clear and ambitious goal to have a society based on 100% renewable energies in 2050. Consequently, one of the largest consumers of energy, residential buildings, are one of the priorities to achieve this target. The energy efficiency shall be increased significantly with the new requirements BR15 and BR20. Denmark has a Building Code, which is among the most advanced all over the world.

The success factors of the policy can be summarised as follows:

- The building industry and research institutions were continuously involved in the development of standards (Danish Energy Agency 2015).
- Builders can choose between standard options and premium options.
- The energy efficiency requirements are regularly updated, every five years.
- Design energy efficiency for a long term: The future energy classes are made publicly available at an early stage (the energy requirements for 2020 were already published with the 2010 requirements). This invites innovation and it provides the opportunity for early capacity building for affected stakeholders (Danish Energy Agency 2015).
- The targets for energy efficient buildings were agreed by 170 out of 175 members of the Danish parliament. The broad majority creates long-term credibility and a low risk of negative changes after elections (Danish Energy Agency 2015).

6.5 The KfW Programme for energy efficiency in buildings in Germany

The German state-owned KfW Bank manages two programmes to improve the energy efficiency of German residential buildings, the EEC (Energy-Efficient Construction) targeting the construction of new buildings and the EER (Energy-Efficient Refurbishment) addressing the refurbishment of existing buildings.[22]

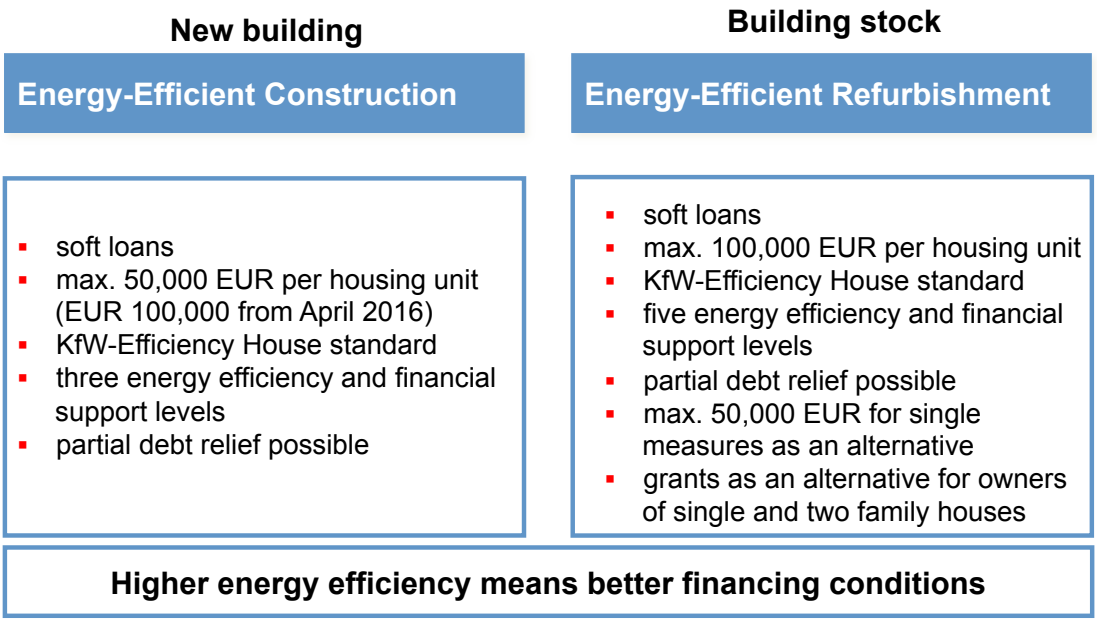
[22] Through the “energy efficiency programme – energy-efficient construction and refurbishment”, KfW also seeks to drive to the energy demand in new and existing non-residential buildings.

Both programmes offer financial products (upfront grants or soft loans, which may have a grant component)[23] to building owners to overcome economic barriers (e.g. lack of sufficient loan financing or own upfront capital, short payback expectations) to realise energy-efficient investments. The amount of the grants depends on the energy efficiency level achieved: the higher the energy efficiency, the better the financing arrangement.[24]

The KfW programme is an innovative and efficient instrument because it uses this scaling system for building energy efficiency, where the level of financial support is also tied to Germany's Minimum Energy Performance Standard. Hence, if the Minimum Energy Performance Standard is tightened, the scaling system's criteria become stricter as well. Additionally, KfW makes use of local commercial bank offices to facilitate loans.[25] Due to government liabilities, KfW can raise capital at low costs.

In 2012, the Government allocated EUR 1.5 billion to finance the grants and reduced interest rates of loans in the scheme. Apart from that, KfW, an AAA-rated bank, was able to raise EUR 8.4 billion for the loans. These add up to EUR 9.9 billion of loans and grants, which leverage another EUR 17.2 billion of investment (IEA 2013).

Figure 37: Overview of KfW's financing mechanisms for new and existing buildings (based on KfW 2015a, b, c)



[23] The financial products offered through EEC and EER differ to a certain extend. For more in-depth information, please see, for example, KfW (2015a, 2015b, 2015c) or bigEE (2012).

[24] The energetic performance of a building can be classified into different Efficiency House (EH) Levels – a scaled system simplifying the financing procedure.

[25] If an investors seeks to gain access to KfW grants, then KfW must be consulted directly.

6.6 Energiesprong (Energy Leap) for buildings in the Netherlands

The mission of the Energiesprong programme is to contribute to the creation of favourable market conditions for an energy-neutral built environment. To achieve this, the implementing agency Platform31 stimulates, and where necessary organises, innovative tendering and commissioning procedures, facilitates the development of supply chains and turns barriers into opportunities and incentives (Energiesprong 2011). In doing so, the innovation programme Energiesprong ensures that there is:

- Openness to cooperation that does not happen automatically;
- Preparedness for surprises and failures;
- Openness to diversity;
- Openness of borders.

Energiesprong facilitates the framework in which support can be provided to frontrunners, resulting in better market conditions and thus enabling innovations to find their way into the mainstream more easily.

The starting point of the programme is embedded in the government objectives as expressed in the Innovation Agenda energy neutral Built Environment (IAGO). The quantitative target defined at the start of the programme is to realise 5,000 building objects, of which 2,500 new buildings and 2,500 renovated buildings, with increasing savings from 45% up to 80% reduction of the total energy consumption. The programme's ambition for energy reductions in the built environment increased from a 45% reduction to completely energy neutral. By the end of 2014 the Stroomversnelling ("Rapids"; deal on net zero-energy houses) realised the reduction of the energy consumption in 2,896 building objects and over 500 building objects are in development and over 10,000 renovations are planned (Energiesprong 2014).

The programme targets clusters (home owners, housing associations, etc.) who are willing to put into practice projects that lead to an energy-neutral built environment. It is carried out on behalf of the Dutch Ministry of the Interior and Kingdom Relations (BZK) by Platform31. The programme started in 2010. Two monitoring reports were published, focussing on the building concepts (TNO 2015a) and resident satisfaction (TNO 2015b) of various projects. The main conclusion is that the promised performance is reached and residents are satisfied.

The key in improving market conditions for energy-neutral buildings is creating a network of different clusters and associations to stimulate the market for nearly zero energy buildings. The development of the market conditions is enhanced by creating deals between suppliers and clients that won't happen without the involvement of Platform31 and by identifying requirements for rules and regulations, crucial for market success.

6.7 Nordsyn - Nordic Market Surveillance on Ecodesign and Energy Labelling Directive

Nordsyn surveillance cooperation for green products intends to improve the efficiency of market surveillance of Ecodesign and energy labelling. The main objective of the Nordsyn cooperation is to more efficiently share market surveillance plans and results of product testing ensuring improved compliance at lower costs. Market Surveillance Authorities and consumers do, therefore, benefit substantially through the Nordsyn cooperation.

In addition, the cooperation between MSAs allows for improved information to manufacturers, eventually simplifying their activities and improving their competitiveness.

A further main objective of Nordsyn is to create a positive impact on European regulation and policies. The Nordsyn-group has been part of the European dialogue on market surveillance and interpretation of the Ecodesign and Energy Labelling legislation (Green Growth the Nordic Way – Web magazine 2015a). The group has put forward recommendations to the European Commission regarding improved data sharing and market surveillance of more complex energy-related products.

Nordsyn involves the MSAs in the Nordic countries, the Swedish Energy Agency, the Danish Energy Agency, the Finnish 'Tukes' Safety and Chemicals Agency, the Norwegian Water Resources and Energy Directorate, and the Icelandic Consumer Agency (Green Growth the Nordic Way – Web magazine 2015b). Since 2013, all of these Nordic market surveillance authorities have participated actively in the project, in order to ensure consistent implementation of the legislations. A continuation of Nordsyn for the years 2016-2017 is planned with new projects.

The Ecodesign and Energy labelling directives are estimated to provide a 5% reduction in energy consumption in Europe by 2020 (Larsen 2015). A condition for achieving this result is that all products put on the market will comply with the requirements for the actual product group. A study undertaken in 2015 by Nordsyn obtained an overall rate of 6.3% of non-compliance, with most cases of non-compliance being related to the energy label. While more difficult to quantify, Nordsyn's impact on manufacturers' competitiveness is also significant. Another impact relates to the increased influence that Nordic countries gain at EU-level on Ecodesign and Energy Labelling related policy developments.

Nordsyn is an innovative policy instrument due to the structured and systematised cooperation between MSAs of several countries. They coordinate their product testing plans and results, effectively trusting and supporting each other with conducting product testing. This allows for an improved, wider-ranging, more effective and less costly compliance of Ecodesign and Energy Labelling requirements (Nordsyn 2015).

6.8 SlovSEFF - Slovak Energy Efficiency and Renewable Energy Finance Facility

The Slovak Sustainable Energy Financing Facility (SlovSEFF) channels financing to sustainable energy projects, hereby reducing greenhouse gas emissions. The innovative aspect of the policy is that it combines:

- loans (EUR 20k – 2,500k)
- grants (7.5% to 15% of loan)
- incentive payments
- and free technical assistance to borrowers (SlovSEFF 2015)

SlovSEFF is one of the first Sustainable Energy Finance Facilities launched by the European Bank for Reconstruction and Development (EBRD) in 2007 with a credit line of EUR 60 million. Its setup was motivated by the closure of the Bohunice nuclear power plant, which was part of the accession negotiations of Slovakia to the EU (EBRD 2014). In 2009, an extension to the facility was approved (SlovSEFF II) with a credit line of EUR 90 million. Since 2014, the EBRD commissioned the third phase of the fund (SlovSEFF III). The EBRD extends credit lines to local financial institutions to develop energy financing as a permanent field of business. Local financial institutions (four in the first phase and six in the second phase) act as intermediaries and lend funds to clients (small and medium-sized enterprises, corporate and residential borrowers) to undertake energy efficiency savings projects or invest in small-scale renewable energy generation. SlovSEFF also provides technical assistance to financial institutions and their clients such as training to:

- promote new financial products
- assess technically eligible products
- create standards for environmental due diligence

Borrowers are assisted to identify energy saving opportunities through energy audits and are advised on high performing technologies. Technical assistance is provided by external, local consultants. The main barrier to the implementation of energy efficiency projects are long payback times and large upfront investments. Incentive payments, which vary according to the project, have helped to correct these market barriers. An evaluation report of the EBRD (2014) finds a “significant improvement in the living standard of residents of the refurbished apartment blocks” (p.21). Even though no benchmarks were set, it is estimated that 31,184 households and therewith 86,376 residents benefitted from the refurbishments. Compliance is ensured by the reporting of annual GHG emissions and energy savings by the borrowers to SIEA (Slovak Innovation and Energy Agency) for a period of 5 years after project completion, via online templates.

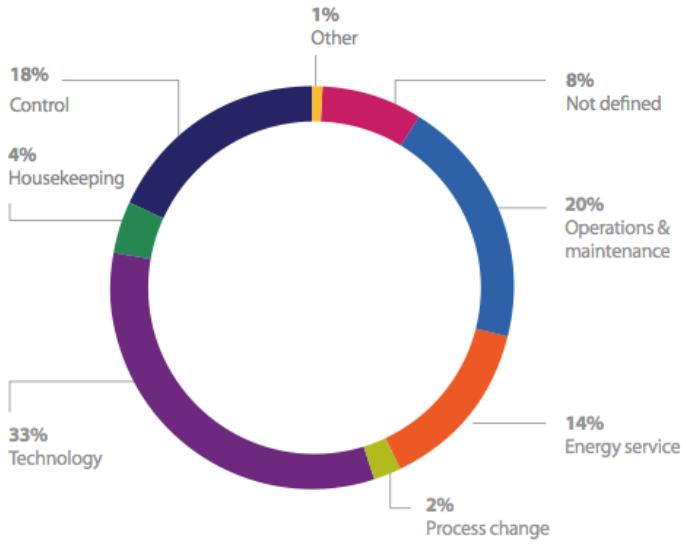
6.9 Irish Large Industry Energy Network

In order to promote energy savings in the industry sector, the Irish Large Industry Energy Network (LIEN), developed in 1995, seeks to support companies to develop an energy management system and to facilitate mutual learning among the participants of this voluntary agreement. Industrial companies often lack information, awareness and know-how about efficient technologies and suffer from high search and transaction efforts. The LIEN programme is effective in removing these barriers through informational and networking activities. Participants have to conduct annual energy audits and establish an energy management system, they also define energy saving targets and publish energy consumption reports.

The largest number of participants are manufacturers of food/drinks (53) followed by pharmaceuticals (41), healthcare (18), electronics (10), and others (44) (SEAI 2013a). LIEN supports the commitments of the companies by organising workshops and seminars, by providing access to energy experts and by organising working groups on special issues. Best practice examples are shared and promoted to the network members.

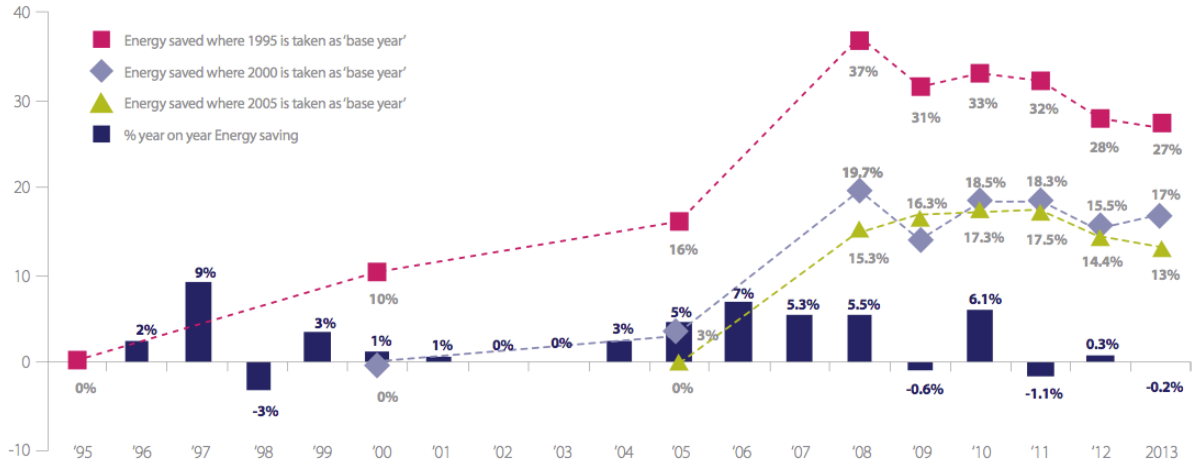
The last annual report, which was published in 2013, categorises the implemented energy saving projects by the type of activity.

Figure 38: Categorisation of Energy Saving Projects (number of projects) (SEAI 2013, p. 11)



Since the establishment of LIEN in 1995 the participants have saved between 1 and 2% of energy per year, on average. The companies that participate since 1995 on average achieved energy savings of 27% of final energy savings (SEAI 2013a). The next figure illustrates the achieved energy savings between 1995 and 2013.

Figure 39: Achieved energy savings (SEAI 2013, p. 10)



6.10 The Car Registration Tax in Latvia

If a new car is registered in Latvia, the passenger car registration tax applies. Latvia is one of several EU Member States that has made their car registration taxes progressively increase with car emissions, to stimulate the purchase of more energy-efficient cars with lower CO_2 emissions. The higher the emissions, the higher the taxation.

- the car registration tax for a car emitting 120 grams of CO_2 is EUR 51.60 (EUR 0.43 per gram of CO_2) in Latvia,
- the registration tax for a car emitting triple emissions (360 grams of CO_2) does not only triple, but amounts to EUR 2,556.60 (EUR 7.11 per gram of CO_2), which is in fact nearly fiftyfold (Mure II & Institute of Physical Energetics 2015b).

Figure 40: Taxation (pricing) scheme for registering new passenger cars in Latvia (Ministry of Finance 2015)

Carbon dioxide (CO_2) emissions grams for 1 km	Tax rate for 1 gram per 1 km (EUR)
Not over 120 grams	0,43
121-170 grams	1,42
171-220 grams	2,13
221-250 grams	3,56
251-300 grams	4,27
301-350 grams	5,69
Over 350 grams	7,11

Due to the registration tax, less efficient passenger cars are put in a disadvantaged position due to higher (registration) costs. Hence, less polluting cars become cheaper in comparison to inefficient models. Through the price signal of the tax scheme, the government seeks to motivate end-users to buy environment-friendly cars and to make car manufacturers penetrate the market with more efficient vehicles.

Apart from energy performance enhancement, the government is able to reduce energy imports and reduce pollution (OECD 2015). Moreover, the Latvian government can collect tax revenues, but no information is available on how such revenues are spent.[26]

[26] Ideally, revenues would contribute to enhance environmental and climate protection measures.

7 Key points and recommendations of 28 country reports

7.1 Background

This section provides for each EU 28 country a summary of the key findings identified in the 28 Country Reports published in 2015 by the Energy Efficiency Watch 3 (EEW3) project. For each Member state, the Country Reports address

- the changes in policies implemented since 2011 by EU Member States and their plans, based on the NEEAPs published in 2014 and other official documents, as well as
- the feedback received from the quantitative survey and expert interviews (cf. Chapter 3) on how effective policy implementation actually is (see more at www.energy-efficiency-watch.org).

7.2 Austria

7.2.1 Overview of Findings

Austria has a federal structure and nine regions that are fairly autonomous. Therefore, policies to increase energy efficiency were implemented at national and regional level. Not every region has the same ambition to address energy efficiency. Some regions, such as Upper Austria, are making very positive steps and other regions do not see energy efficiency as a high priority. That is why it is difficult to assess Austria as a whole. According to the national experts, Austria is among the Member States that have progressed well since the second NEEAP. The country decided to implement an energy efficiency obligation scheme according to Article 7 of the Energy Efficiency Directive (EED). However, the implementation has just begun and there is no impact yet to report.

Furthermore, the Energy Efficiency Act was developed to fulfil the requirements of the EED. Austria plans that all new buildings and all major renovations will be built as nearly Zero Energy Buildings (nZEB) until 2020. In terms of building renovation, there is a national funding programme that stimulates building activities in the residential sector. The majority of national experts underlines these efforts: More than 90% of the experts think that Austria makes some or good progress in building renovation. They also rated efficiency requirements for new buildings as one the most effective policies.

In the industry sector, energy efficiency seems to become a normal business practice for a significant number of companies. However, energy prices are still very low (energy taxation is seen as “not effective at all” by 40% of the experts) and the remaining investment opportunities have long payback periods. That is why 70% of the national experts agree that Austria made only some progress in this sector. The transport sector is still a weak sector due to minimal implementation of EU directives

and lacking integration of spatial planning. 40% of the experts mentioned that Austria does not make progress in this field.

7.2.2 Sectoral Progress

As part of the overarching **governance framework**, an energy efficiency target was established. In 2014, the National Energy Efficiency Act was passed to fulfil the requirements of the EED. Concerning Article 7, a decision to introduce an energy efficiency obligation scheme (EEO) has been made. The EEO shall be established in combination with alternative measures. Due to the federal structure, the National Energy Agency AEA and regional energy agencies are the main actors to implement energy efficiency measures. Austria is very active to increase the energy service market. The existing measures are all ongoing. New measures are primarily implemented at national level, such as networking activities, information campaigns and energy performance contracting programmes.

In the **public** sector, various comprehensive measures contribute to energy efficiency improvements such as the procurement of energy efficient products and energy performance contracting. The Federal Energy Efficiency Act includes the 3% renovation target for government buildings. Some regions have set up their own programmes for energy-efficient procurement and public buildings. An overall strategy and targets for the public sector are missing.

Energy-efficient **buildings** are addressed through energy efficiency requirements and Energy Performance Certificates (EPCs) under the Energy Performance of Buildings Directive (EPBD), but also through national and regional programmes. One key programme is the “Residential Building Subsidies”, in which subsidies are paid in the form of grants and/or allowances by the regional governments. Another financial incentive programme is the “Austrian Federal Government’s renovation drive”. In addition to these programmes, several measures were implemented in the regions. For example, building-related measures were introduced with the Lower Austrian Climate and Action programme. Existing and ongoing measures are energy consulting programmes and local information campaigns.

The policy package for **appliances** is characterised by the EU Ecodesign Directive and the EU Energy Label. The klima:aktiv campaign as well as several regional energy agencies organise information campaigns. The online database topprodukte.at still exists. There are some additional efforts at regional level. All measures are ongoing, no further improvements have been made.

The **industry and tertiary sector** made some progress in the last years but most of the measures are ongoing. At national level, the main activity is the Federal Energy Efficiency Act, together with a thermal building renovation programme for enterprises, a support programme for energy efficiency investments, several klima:aktiv activities, and financial support for energy services and audits. Large companies are required to introduce an energy management system starting in 2015. The regions implemented

additional policies. For example, Upper Austria developed green energy clusters to increase the innovative capacity and competitiveness of companies. Some regions offer subsidised advisory services and additional investment subsidies. New programmes are the building measures from Lower Austria.

In the **transport** sector, all measures continue and only a few measures were newly developed. In 2012, a new overall transport plan for Austria was implemented. At national level, the newly developed Lower Austrian Electro mobility Strategy was implemented for the period 2014-2020. Ongoing regulatory measures are speed limits and parking space management. Financial support is given for vehicles with efficient propulsion systems. In Lower Austria, subsidies for electro mobility were implemented in 2014 with a budget of EUR 2 million per year. Most taxation systems are ongoing, only the standard fuel consumption tax was improved. It is however, not linked to fuel consumption and CO_2 emissions. The klima:aktiv information campaign was extended. The integration of spatial planning with transportation planning is lacking.

7.2.3 Recommendations

Further improvements to the policy package could be the following:

- The **governance framework** includes an energy efficiency obligation scheme, which still needs to be implemented well. A major barrier for energy efficiency improvements are low energy prices. Experts gave the highest rating for “not effective at all” to energy taxation. This should be addressed by policy makers. The role of the energy agencies should be strengthened, as well.
- The law that includes a 3% renovation target in the **public sector** for central, national-level government buildings only encourages the regional level to reach at the target. This would better be formulated as an obligation.
- The policy package for **buildings** is very comprehensive and the financial incentive programme for new buildings is very effective. However, in the past few years, several regional governments introduced barriers that have hindered programme implementation. Participation in these programmes should be facilitated.
- **Appliances** are targeted by EU measures. The effectiveness of the EU energy label in promoting energy-efficient appliances would be improved by economic incentives to increase the energy efficiency of energy-using products and a programme to support education and training for retail staff.
- The **transport** sector only implements minimal EU requirements. Most of the measures are still ongoing. The sector seems to be of low priority in Austria. The integration of spatial planning with transportation planning would be important. The public transport system outside Vienna is not very effective and should be improved.

7.3 Belgium

7.3.1 Overview of findings

Belgium is a federal state where regions have extensive power on energy issues: the rational use of energy falls within the competence of the regions (Flanders, Wallonia and Brussels), while the Federal State only implements measures aimed at enhancing energy efficiency within its competences. As a result, most measures related to energy efficiency are taken and implemented at regional level. The Belgian NEEAP has a short part on the federal level, and a more extensive part composed of the regional energy efficiency plans of the three regions, making it difficult to have an overview of the national situation.

Based on the screening of the NEEAP and the findings from the survey conducted with Belgian experts, Belgium has made low to medium progress in energy efficiency policies since the second NEEAP. More than three quarters of experts (77%) consider that the overall ambition of the energy efficiency policies is low or ambitious in a few sectors only. And more than two thirds (69%) have seen no or only few additional policies since the second NEEAP. The NEEAP screening confirms this opinion: apart from the transport sector, no significant energy efficiency policy has been introduced since the last report. In both Flanders and Wallonia, the focus remains on buildings efficiency. More than two thirds of experts that are aware of the Energy Efficiency Directive (EED) Article 7 target think that Belgium will not reach it. For Wallonia, experts point out that access to financing is the main challenge, whereas Flanders focuses on implementation of existing policies. Forecasts are more optimistic for buildings, where 57% of experts believe that Belgium is on track for the implementation of the nearly Zero Energy Buildings (nZEB) obligation by 2020, which is among the highest ratings in the EU.

7.3.2 Sectoral Progress

Within the energy efficiency **governance framework**, Belgium has announced an indicative target of 18% primary savings by 2020. All three Belgian regions have opted for alternative measures to the obligation scheme. In Flanders, electricity distribution grid operators have an obligation to perform a number of actions in the area of energy performance of buildings. Energy taxation and national energy efficiency funds are seen as poorly efficient by Belgian experts.

Experts also consider that energy efficiency is largely taken into account in **public sector** activities. Flanders and Brussels have continued their dedicated policies, and there is a target of 50% sustainable public procurement at federal level. In Wallonia, the Energy Service Company (ESCO) market has not developed very well so far. Flanders on the other hand has implemented several initiatives to reduce public buildings energy consumption, which may be the reason why experts see progress in this area at the country level.

Experts see progress in building renovation in the residential **building sector**, also due to the availability of several funding schemes at federal and regional level, either general or targeted at low income households. In Wallonia, households can access an interest-free loan (the Ecopack) to finance residential renovation work. Tax reductions were available for households that undertook renovation but have been curtailed as of 2012, and only roof insulation works remain eligible in 2015. Experts rate energy efficiency requirements for new and renovated buildings as the most efficient efficiency measures in Belgium, as standards are upgraded regularly. However, they also estimate that renovation rates remain low.

Regarding **appliances**, Belgium relies on the implementation of the Ecodesign and Energy Labelling Directives, complemented by subsidies for buying energy-efficient appliances. Belgium also has information campaigns to raise public awareness on energy efficiency of appliances (in view of reducing electricity consumption given that Belgium may be at risk of power shortages and blackouts).

In the **industry** sector, the federal tax for energy savings investment is ongoing and regions have established financial incentives for companies to invest in efficiency. Wallonia has continued its voluntary agreements with the industry that promote energy efficiency investments up to 2020. However, in Flanders, the discussions between the government and the industry on renewing the agreement are ongoing since 2012 with no results. Furthermore, Wallonia has been facing difficulties in monitoring the effective implementation of the energy audit obligation on large companies. This results in a mixed situation for the industry sector.

In the **transport** sector, improvements in strategic mobility planning on municipal level were mentioned by experts. The NEEAP highlights that regions have set up measures and mobility plans to promote public transports and soft transportation. Several fiscal measures have been implemented (road pricing for trucks, registration tax based on CO_2 for cars). Nonetheless, an important need to act still exists, as for instance fiscal advantages for company cars are still in place.

7.3.3 Recommendations

Further improvements to the policy package could be the following:

- The **governance framework** should be strengthen in order to ensure that the Art. 7 target of 1.5% savings per year is reached. This could be achieved either through alternative measures such as energy efficiency funds or through an Energy Efficiency Obligation scheme, or through a combination of both.
- To increase the renovation rate in **public** buildings, further measures may be required, such as increased funding, improved information of building managers and establishment of a support to the ESCO market. Overall, improving awareness of energy efficiency benefits in the public sector is required to achieve improved results.

- In the **residential sector**, the use of interest-free loans could be expanded and their budget increased to increase renovation rates.
- In the **industry sector**, engagement with industry should be increased. Flanders should seek to reach a voluntary agreement that sets ambitious yet realistic targets, or, if negotiations are not successful, take other effective measures. Wallonia should improve availability, affordability and monitoring of energy audits.
- In the **transport sector**, fiscal rebalancing (i.e. higher fossil fuel taxation, and support measures for public transport) may be needed in order to efficiently encourage the use and development of public transports.

7.4 Bulgaria

7.4.1 Overview of findings

While the second NEEAP described a clear strategy for the promotion of energy efficiency in Bulgaria including a balanced policy package, experts judge that progress since then has been limited: only around 30% of them considered the energy efficiency policy as ambitious. Domestic experts rate Bulgaria to be among the states that has made relatively little progress in energy efficiency policies. A comprehensive approach that would link energy efficiency with economic development and environmental policies is lacking. While most measures established before 2011 have been maintained, only a few additional policies were introduced in the last three years, such as an obligation scheme and promotion of green public procurement. Some additional progress has been made in the exemplary role of public buildings, building renovation (grant system for multi-family residential buildings) and transport. Very little progress was achieved in decreasing fuel poverty and in creating an energy service market. Half of the experts think that the Energy Efficiency Directive (EED) Article 7 savings target (new savings of 1.5% of the annual energy sales to final consumers) is not likely to be achieved.

7.4.2 Sectoral Progress

With respect to its overall energy efficiency **governance framework**, Bulgaria has introduced an energy efficiency obligation scheme in addition to already existing measures. While the final design is still pending, the target of the obligation is equivalent to the target set in accordance with article 7(1) of the EED and is distributed over all final customer sectors: industry, transport, households, commerce, civil society organisations, agriculture, forestry and fishery, services etc. Energy traders will be the obligated parties. Experts note a general lack of engagement from the government for energy efficiency. Bulgaria has established an agency for energy efficiency and renewable energy, which is responsible for promoting efficiency on the demand side. However, the supply side remains under the responsibility of the Ministry of Energy, and is being given priority over efficiency.

In the **public sector**, Bulgaria has introduced criteria for green public procurement. Additionally, energy management systems and audits for public buildings larger than 500m^2 were implemented. A national renovation programme for publicly owned residential buildings is ongoing, as well as a grant programme for energy efficiency projects in municipal buildings. Experts report that the 3% renovation target is unlikely to be achieved and that most actions in government buildings do not exploit the full energy efficiency potential and do not spur innovative solutions. The Municipal Energy Efficiency Network "EcoEnergy", established in 1997, has helped municipalities implementing numerous energy efficiency projects.

Measures in the **building sector** continue to focus on multi-family residential buildings. Grants that were planned for multi-family residential buildings in the second NEEAP have now been introduced. The residential energy efficiency credit line (REECL), a financing scheme for energy efficiency investments, was available until July 2014. It is not clear whether the programme is being continued. Additionally, awareness and training campaigns as well as consultation centres were established. However, the majority of experts (61%) believe that Bulgaria is lagging much behind in meeting its obligation under the Energy Performance of Buildings (EPBD) that all new buildings be nearly zero-energy buildings by 2020 (among the lowest ratings of all Member States).

Policies to increase the energy efficiency of **appliances** are in line with EU directives (Ecodesign and Energy Labelling Directives). Soft loans are offered for energy-efficient appliances in buildings. Information campaigns promote efficient appliances.

In the **industry and tertiary sector,** no significant changes are noted. Several industrial entities have individual energy saving targets and can apply to programmes from the European Regional Development Fund (ERDF). An intradepartmental working group was established for energy efficiency policy in the industrial sector. Economic incentives are provided for industry through the use of Structural Funds and are reported to have had a successful uptake.

Energy efficiency policies in the **transport sector** continue to be similar to those of the second NEEAP and are considering different transport modes. Among them are projects supporting modal shift and investment in public transport infrastructure. Nonetheless, experts consider that the policy package on transport is insufficient.

7.4.3 Recommendations

Further improvements to the policy package could be the following:

- Regarding the general **governance framework**, the competence of the Agency for Energy Efficiency and Renewable Energy should be strengthened to give priority to energy efficiency on the demand side over energy supply projects. The energy efficiency obligation scheme could realise significant energy savings, however a good design with an effective monitoring and compliance regime will be crucial, for example via audits and penalties. In addition, excise

duties on gas and electricity for businesses continue to be relatively low. Increasing them can incentivise energy efficient behaviour.

- In the **public sector**, procedures for green public procurement should be simplified. Staff capacity should be built up to encourage uptake of more innovative activities.
- Policies in the **building sector** should be extended to commercial buildings. Targeted new deep renovation programmes, complementing the actions undertaken in the EEO scheme, are necessary to realise the potential for energy savings of the building stock. These can furthermore trigger employment in the construction sector in Bulgaria, which experienced many job losses since 2008. Also, a focus should be set on vulnerable households to decrease fuel poverty.
- In the **industry sector,** monitoring and implementation of measures foreseen in the voluntary agreements should be strengthened.
- In the **transport sector**, experts call for a comprehensive approach that focuses on improvement to public transportation infrastructure. Local authorities should be encouraged to adopt local mobility plans that support modal shift and improve public transports.

7.5 Croatia

7.5.1 Overview of Findings

According to the analysis of official documents, Croatia seems to have a solid foundation to foster energy efficiency in all sectors, with best conditions in the residential sector. The experts' survey further shows that Croatia is among the Member States, which made medium progress in energy efficiency policies in recent years. Experts point out that in connection to the EU accession, additional measure have been introduced, however, some are still under development. Further harmonisation of EU legislation with national law remains a challenge for Croatia's energy efficiency policy in the future.

7.5.2 Sectoral progress

Concerning the **governance framework**, the EED and the EPBD could trigger further energy efficiency improvements in the future. The Article 7 will be partly fulfilled by alternative measures, the introduction of an energy efficiency obligation scheme is planned. Currently, half of the experts think that the target under Article 7 of the EED cannot be met. In addition, the majority (62%) of experts believe that Croatia is lagging much behind in meeting the nearly Zero Energy Buildings (nZEB) standard for new buildings by 2020. An energy agency is in place (EPEEF).

With regard to the **public sector**, a strategy and action plan (2013–2015) is implemented and a number of measures to improve energy efficiency introduced.

Energy efficiency is explicitly stated as a criterion in the Public Procurement Act, though further improvements and guideline developments are planned. A challenge concerning public procurement is a lack of national-level energy efficiency knowledge and capacity. Experts noted that there is more progress on energy efficiency at the regional and local level than at the national (e.g. systematic energy management in governmental buildings). One of the main drivers is that Croatian cities and municipalities recognised the EC Covenant of Mayors initiative as an excellent base for Energy Efficiency development. Based on expert interviews, renovation of buildings is progressing slowly. Though the target had been to renovate several hundred public buildings by 2012, only a few renovations have been realised so far.

Numerous activities aim to improve the energy efficiency of **residential buildings**. Residential sector programmes, in particular the multi-family building programme, were noted as a positive development in Croatia. Experts stress that the funding programme has accelerated the renovation of buildings and the improvement of the energetic quality of heating systems. This also explains the high rating of experts concerning progress made in building renovation. 43% of experts see good and 55% some progress made. Energy efficiency requirements for renovation of buildings are in general ranked to be high by 50% of the experts. However, the energy certification verification process was pointed out to be a weakness in the building sector.

Regarding energy efficient **appliances** experts state that the National Fund for environmental protection and energy efficiency had two public tenders in 2015 for sub-financing purchases of Topten energy efficient appliances[27]. Public interest was extremely high, and further tenders are planned for 2016. Ordinances on labelling of energy efficiency for households appliances are in force, however, enforcement, monitoring and verification are missing. Further revisions and harmonisation with EU Ecodesign requirements are planned.

With regard to the **industrial and service sector**, the economic crisis negatively affected these sectors' ability to invest in energy efficiency. Despite the availability of funding programmes and improved awareness, experts see rather weak progress made. The service sector is assessed similarly. Barriers are missing information, knowledge (e.g. on cost-effectiveness of measures) and capacity issues. Large companies are required to perform energy audits by law and an incentive programme for small and medium sized companies is in place. The Smart Specialisation Strategy, which has been prepared for years and should soon be adopted, can support SMEs to partly overcome energy efficiency barriers.

In the **transport sector** several measures have been implemented. However, according to the survey, similarly weak progress as in the industrial sector has been made. The public transport infrastructure is mentioned as being too weak (e.g. the train network is very poor and reliability is low). An incentive to switch the transport mode is

[27] More information on www.top-ten.com.hr

the introduction of public bicycles in cities. Concerning technical and behavioural measures, Croatia has introduced e.g. new programmes to support hybrid electric vehicles and training for eco-driving. It was further reported that energy efficiency projects are generally limited to larger or more innovative cities.

7.5.3 Recommendations

Further improvements to the policy package could be the following:

- Within the **governance framework**, an obligation scheme according to Article 7 of the EED is only planned and should be implemented. It is unclear how energy performance contracting measures were implemented. This should be described in detail. If there are only planned measures, a working plan should be developed to support energy performance contracting.
- In the **public sector** the Public Procurement Act should be further developed towards energy efficiency and guidelines quickly set. Training programmes to strengthen the knowledge and capacity in the public sector with respect to procurement and buildings need to be further strengthened, also to improve the absorption of available funds.
- Concerning the **building sector,** the quality insurance of issued Energy Performance Certificates (EPC) needs to be improved by additional controlling, training and introduction of penalties for misrepresentation. This could also improve the competitive position of companies focused on quality assurance, which are currently in an adverse position. The successful enforcement of EPC requires further explanation to the consumer by professionals, as well as support in design and specification of improvements. Trainings of all involved stakeholders as well as awareness rising measures are needed as a fist step to further develop the nZEB market in Croatia.
- With regard to **appliances**, further harmonisation with EU requirements will be necessary and the allocation of funds will be crucial. Having in mind that the European Commission plans to revise the Labelling Directive, further harmonisation will be a challenge.
- Due to crises and other barriers, **industrial and service sector** are largely underdeveloped. According to experts, implementation of measures in the industrial and service sectors is on a low level in Croatia. It is therefore necessary to develop a systematic approach for the promotion of energy efficiency (e.g. improving the extension of knowledge and capacity building networks, further offers of energy consulting as well as pilot projects), tied with the aim to increase the competitiveness of domestic industrial production.
- The **transport sector** could improve its energy efficiency policy through improving the public infrastructure in cities, further incentivising shifts to more energy efficient transportation modes. In the future, cities could, nationally supported, further address the development of Sustainable Urban Mobility Plans (SUMPs). The importance of SUMPs are not recognised and a

systematic transport planning is missing. A Fund for environmental protection and energy efficiency gained a great success in the past.

7.6 Cyprus

7.6.1 Overview of Findings

Based on the NEEAP screening and the opinion of Cypriot experts, Cyprus has made good progress since the second NEEAP. Relatively, it has seen the strongest increase in progress of energy efficiency policies across EU Member States compared to the three preceding years: its country progress indicator went from 22nd out of 27 in 2012 to 5th out of 28 in the 2015 survey (for more information, please see the section on "Policy Developments according to the Expert Survey").

Cyprus has a national target to cut overall energy consumption by 10% by 2016 (based on 2005 levels). In 2010, the interim target of a 3.3% reduction was exceeded (3.57%) and it is expected that the 2016 target will be reached on the basis of measures implemented from 2004-2010. The Ministry of Energy, Industry, Commerce and Tourism is responsible for energy efficiency.

In response to the economic crisis, an EU support group has been established, which deals with EU support and national adjustment programmes. Energy is also part of their agenda. The work of the support group in this field is rated as very good by Cypriot experts.

The awareness on energy efficiency and its benefits to the local community has been increasing in Cyprus. Several local authorities (municipalities and communities) are developing long-term visions and strategies. Specifically, 23 local authorities have signed the Covenant of Mayors and delivered Sustainable Energy Action Plans with the technical support of the Cyprus Energy Agency. These action plans means reductions of carbon dioxide (CO2) emissions by 598 815 tonnes by 2020 from their implementation. Yet, a national long term strategy is missing. The driving force of energy efficiency policy in Cyprus are EU directives.

Cyprus has adopted a regulation for Energy Service Companies (ESCOs) in 2014, and in October 2015, twenty ESCOs were registered. It is expected that this number will increase further.

7.6.2 Sectoral Progress

The **governance framework** is provided by the regulation on energy service providers, the legislation on energy audits (incl. training and licensing of auditors) and on energy performance contracting for public buildings. A National Energy Efficiency Programme is to be developed to achieve the energy saving target of Article 7 of the Energy Efficiency Directive (EED) through alternative measures. The Cyprus Institute of Energy, which coordinated energy efficiency programmes and was responsible for

dissemination activities, stopped operations in March 2015. Grant schemes under the Special Fund for Energy Efficiency and Renewables were mostly stopped in 2013, yet income from emission allowances (ca. EUR 2 million in 2015) will partly be used for the Fund in future.

Progress in the **public sector** is mixed. While grant schemes for a public sector strategy expired in 2013, nearly-zero energy buildings performance requirements for public buildings are implemented and will be enforced in 2019, in line with the Energy Performance of Buildings Directive (EPBD). At the moment, no funding programme is available for public buildings. The main support will come from the EU Structural Funds. The Cyprus Energy Agency has launched a tender for energy efficient street lighting in 20 local authorities in Cyprus in August 2015. Green public procurement guidelines have been introduced.

In the **residential buildings sector**, a new support scheme "I renovate – I save" was introduced for the energy renovation of households and commercial buildings. The programme have a budget of around 33 million euros for the period 2014-2020. and is financed by the EU Structural Funds. This programme introduces the energy renovation as a package of energy efficiency measures and provides grants of 50% or 75% of the eligible costs depending of the vulnerability of the applicant and the achieved improvements. For vulnerable families and for improvements to zero energy buildings standards, the grant reaches 75%. Furthermore, training and licensing of energy auditors started in 2013 and several pilot projects for nearly zero energy buildings are planned.

EU Directives (Ecodesign Directive and Energy Labelling Directive) have been transposed, but no new measures are being implemented in the **appliance sector**.

For the **industrial and tertiary sector,** Cyprus transposed energy audits under the Art. 8 EED for large enterprises, yet clear targets for companies or financial support schemes for energy efficiency measures are lacking.

In the **transport sector**, an overarching energy efficiency policy package is absent, even though the sector consumes most energy in Cyprus. Yet, some improvements in the policies were made. These are an annual vehicle tax based on CO_2 emissions, which is mandatory since 2013 to incentivise more efficient cars, an increase in fuel taxation in 2013 and 2014 as well as investment in infrastructure providing new busses and better schedules. Feasibility studies are in progress for the introduction of a tramway line in the wider area of Nicosia.

7.6.3 Recommendations

Further improvements to the policy package could be the following:

- Given the current policy and institutional framework, experts consider the implementation of the EED as very challenging. With regard to the **governance framework**, the government should develop a national long term vision and a

consistent strategy for energy efficiency, which could be supported by an energy efficiency fund or an energy efficiency obligation scheme. It could also enhance the role of local authorities on Sustainable Energy Action Planning and step up support.

- The **public sector** suffered from the financial crisis. New funding programmes need to be developed to improve energy efficiency in this sector and realise the 3% renovation target of public buildings.
- The energy performance of existing **buildings** in the residential sector remains poor. Financial incentive schemes for energy audits and funding opportunities for key investments, as well as information campaigns, should be scaled up. Furthermore, education and training for professionals could be expanded.
- Additionally, further information campaigns for energy-efficient **appliances** are needed. In general, Further emphasis on information, education and awareness should be given and supported by the government.
- There is a significant potential for electricity savings in the **industry and tertiary sector**. So far the ambition to realise these savings has been low. A change of the energy culture is therefore needed. Voluntary commitments and energy efficiency networks could help to increase awareness and further motivate companies to improve energy efficiency. The hotel sector is very important in Cyprus and could become a role model for energy efficiency. Strategic and visionary programmes are needed to reduce electricity consumption and increase awareness.
- Also, the policy package in the **transport sector** should be expanded. A good starting point is to further encourage modal shift.

7.7 Czech Republic

7.7.1 Overview of Findings

For the Czech Republic, medium progress was observed between the second and the third NEEAP. Two thirds of experts think that the ambition of energy efficiency policies is “rather low” or “ambitious only in a few sectors.” The NEEAP screening shows that few but important measures have newly been implemented such as setting up an Energy Efficiency Department of the Ministry of Trade and Industry, implementing Article 5 and 6 of the Energy Efficiency Directive (EED), and mandatory audits for large energy end-users. However, energy efficiency can be considered to be hindered by an outdated energy strategy as of 2003 as well as a lack of awareness, funding, and human capital.

7.7.2 Sectoral Progress

According to experts, the overarching energy efficiency **governance framework** in the Czech Republic is based on a relatively old energy strategy and weak energy efficiency

objectives with hardly any link to EU objectives. However, the government's strategy for building renovation is reported to be of high quality. The document screening shows that the saving target for 2020 was updated according to the EED. Since the last NEEAP, a new department for energy efficiency was founded at the Ministry of Trade and Industry. The introduction of a White Certification Scheme is (still) planned, but nothing is said about the concrete implementation. To comply with Article 7, the Czech Republic has opted to implement a set of alternative policy measures. To further support the energy service market, the certification of Energy Service Companies (ESCOs) was included in the energy management law. A methodology for energy performance contracting is being prepared.

Regarding the **public sector**, the implementation of Article 5 and 6 of the EED has taken place suggesting that the public sector starts to lead by example. A list is available to purchase energy efficient products. To increase the energy efficiency of public buildings, a scheme to provide soft loans for municipalities is ongoing. The promotion of the introduction of energy management was improved and an operational programme to support the retrofit of buildings was recently developed. However, building renovation is still lagging behind in many municipalities. A lack of human capital can be considered a key barrier in this respect.

The effectiveness of energy efficiency policies the **residential buildings** sector can be considered as mixed. Generally, public awareness of energy efficiency in buildings is low and households lack the financial means to realise refurbishment. Moreover, regarding the implementation of the nearly zero energy building (nZEB), a substantial amount of experts believes that there is space for enhancement. However, in comparison to other instruments, energy efficiency requirements for new buildings are considered to be quite effective. Apart from the prolongation of the Green Saving Programme, further funding and financing instruments are planned and implemented, while, for instance, the provision of soft loans via building society savings schemes is ongoing but with reduced subsidies.

The third NEEAP did not provide any additional measures regarding the policy package for **appliances** compared to the second NEEAP. The package is mainly characterised by EU Directives like the Ecodesign Directive and the Energy Labelling Directive. Furthermore, the Energy Star was implemented as well as an information campaign to promote energy saving appliances. All these measures are ongoing. While the policy package appears to be balanced, some important measures like financial incentives are still missing.

In the **industry** sector most measures are ongoing, such as the voluntary energy saving commitments and the provision of investment aid to increase energy efficiency in industry through the "Operational Programme Industry and Enterprise (OPIE)". There are also measures in place to promote energy audits and energy management systems. However, financial support for energy audits or advisory services, which could improve compliance with the regulation, is missing.

As regards the **transport sector**, most measures appear to be ongoing although information is missing on several instruments . Some planning instruments, voluntary agreements to improve the energy efficiency of new vehicles as well as economic incentives are in place, but generally without further improvements. The latter include a "feebate" system for new vehicles according to the absolute level of CO_2 and a mandatory flat rate charge for the highways usages by cars and lorries. Information and advice programmes are not mentioned. Experts report that electric and hybrid cars are prioritised by some municipal governments (e.g. in Prague).

7.7.3 Recommendations

Further improvements to the policy package could be the following:

- Regarding the overarching energy efficiency **governance framework**, the government is adviced to take into account an update of its energy strategy and its overall energy efficiency objectives given the critique voiced in the expert survey. The new Energy Efficiency Department should be supported with funding and human capacities. Energy Efficiency Obligations should be implemented well and quickly.
- For the **public sector,** it is key to design an implementation plan for renovating public buildings. Financing and human capital (i.e. through training) should be enhanced for building renovation to take place at the subnational level.
- In order to enhance energy efficiency in **residential buildings**, the government should increase public awareness on the benefits of energy savings, while also establishing funding and financing mechanisms easing energy efficiency investments.
- For **appliances**, it appears crucial to establish an education and training scheme for retail staff, so that end-users benefit from better and more comprehensive information regarding the energy consumption of appliances. Furthermore a financial incentive programme is missing and should be developed to promote the best available technology.
- In the **industry and tertiary** sector, the need for financial support for energy audits and advisory services should be assessed. This may improve compliance with energy audit requirements and provides an opportunity to realise private sector investments in energy efficiency.
- With respect to **transport**, information is missing to assess the NEEAP fully. It seems that this sector is not a priority in the Czech Republic. Information and advice programmes should be established. No clear economic incentive programme is in place.

7.8 Denmark

7.8.1 Overview of Findings

Based on the NEEAP screening and the findings from the survey conducted with Danish experts, Denmark's energy efficiency policies have progressed very well. According to the survey results, Denmark is the Member State that has made most progress in energy efficiency policies since the second NEEAP. Two thirds of the experts recognised the implementation of many additional policies in the last years. The government has taken energy efficiency as a topic very seriously. There is a strong framework for energy efficiency, backed by the majority of the political parties.

Furthermore, an energy efficiency obligation scheme exists since several years with strong impacts. Energy utilities have already reached a 2% reduction of energy sales per year.

Two of the main aims in Denmark are to become independent of fossil fuels by 2050 and the regular tightening of the building codes. 85% of the Danish experts agree that Denmark is on track to meet its obligation that all new buildings will be nearly Zero Energy Buildings (nZEB) by 2020. Almost all experts agreed that the requirements for new and existing buildings are partly or very effective. However, the potentials to renovate existing buildings are still high and it remains a challenge to convince homeowners to undertake renovations. A first step is the "Better Homes" programme. It is a relatively new programme with the aim to influence property owners to renovate their buildings. The energy efficiency obligation scheme is working well and especially supports the industry sector. Consequently, 41% of the experts think that energy efficiency in industry makes good progress while 54% believe that this sector makes only some progress.

A main challenge in Denmark is the transport sector. 51% of the experts think that this sector makes no progress at all. In addition, the policy package for appliances was not improved in the last three years and is not very balanced.

7.8.2 Sectoral Progress

The overarching energy efficiency **governance framework** is characterised by an Energy Policy Agreement and the Energy Strategy 2020 including the overall target of fossil fuel independence by 2050. The strategy document "Our Energy", which was published in 2011, contains a wide range of initiatives with the aim to achieve high energy savings until 2030 respectively 2050. The Danish Energy Agency is responsible for the organisation and implementation of energy efficiency measures. The Energy Saving Trust was dissolved.

In 2006, the energy efficiency obligation (EEO) scheme was introduced and the targets are increased regularly (see good practice example). To promote the Energy Service Company (ESCO) market, the Danish Energy Agency focuses on advice. There is a

however a need to more strongly support ESCOs. Therefore the “Better Homes” programme was newly developed to support them. In general energy taxes are high in comparison to other countries.

In the **public** sector, all existing measures are ongoing. Some measures were improved and a few new ones were introduced. An Action Plan sets regularly updated targets for the public sector. Since 2013, municipalities can take up loans for energy savings. One third of municipalities have already implemented Energy Performance Contracting projects. To promote energy efficient products, a strategy for smart procurement was launched in 2013. A Growth Plan DK was newly established to increase investments in the renovation of public housing.

The Building Regulation is the main instrument in the residential sector focusing on **buildings**. It has strict energy performance requirements, which are strengthened regularly (see good practice example). The Danish Energy and Renovation Strategy was finalised in 2014, but a new one was developed containing 14 initiatives to promote renovation activities. Subsidies for energy efficiency in households are still provided under the energy saving obligation scheme. The BoligJobPlan, which offered a tax reduction on wage costs, was completed in 2013. To make the energy label more visible, a website was created to inform building owners. The advice and audit activities were improved and some information tools were newly introduced like the “Better Homes Scheme”. Furthermore, a network was set up to bring together different stakeholders.

Appliances are mainly targeted by EU regulations such as the Ecodesign Directive and the Energy Labelling Directive. The sector plays a subordinate role in Denmark and only some additional measures have been implemented. Among them are the Energy Star Label and the Club100 information campaign. No economic incentive programme is in place.

In the **industry and tertiary** sector, the Energy Efficiency Obligation Scheme puts energy companies under an obligation to make concrete efforts to implement energy efficiency measures. Targets were increased in the last years. All other economic incentive programmes were closed and agreements with energy-intensive businesses were not continued. New policies are the mandatory energy audits for large enterprises and the programme “Energy Management light”, which aims to convince companies to implement an energy management system. A “Centre for Energy Savings in Industry” was newly developed.

In the **transport** sector some new measures were implemented, but most of the programmes are ongoing. A focus is set on information and advice activities. Planning instruments are not mentioned. Requirements concerning the energy efficiency of taxis, limos and healthcare transportations were strengthened and environmental zones in large cities were established. The tax system includes a car purchase tax, a registration tax, a fuel tax and an annual registration tax. Furthermore, an exemption for electric and hydrogen vehicles was added to the tax system. A new programme is

in place to support the energy efficiency effort in public transport. Financial support is now given to electrification of railways, improvements of accessibility of public transport, cycle paths, infrastructure fund for electric, gas, and hydrogen vehicles. A broad range of information and advice measures have been implemented.

7.8.3 Recommendations

Further improvements to the policy package could be the following:

- The **governance framework** in general is strong, but a weak point is the integration of national policies at regional and local levels. A better interaction is needed, as 40% of the municipalities do not have energy efficiency as a top priority. Local actions should therefore be better supported. The Danish Energy Agency is very effective, yet experts say it could be more proactive in some fields.
- Denmark is lagging behind in achieving the targets set for the **public** sector. Energy efficiency is not always a high priority in ministries and municipalities. Information and education campaigns could address this barrier.
- One large barrier to increase the energy efficiency of **buildings** is the long payback time due to low interest rates and low energy prices. This could be addressed with financial incentives. Furthermore, Denmark focuses on the target to reach zero energy buildings but more attention needs to be put on the energy renovation of buildings. This is crucial because the renovation of existing buildings has the largest potential for reducing energy. The “Better Homes Scheme” is a good starting point and could be extended.
- The **appliance** policy package is not very well balanced. The policy package should be improved in terms of financial incentives, learning programmes and information campaigns.
- The Danish Energy Agency is just starting to investigate the **service sector** and to develop emission targets for small businesses to tackle their energy consumption. The CO_2 taxes for companies are too low and the Emission Trading System is not working well. Hence, this could be improved.
- The **transport** sector policy could extend its scope by planning instruments (e.g. smart spatial planning) and research and development (R&D) support. The sector is not well addressed yet. Taxation of both fuel and cars should be further developed to encourage people to buy efficient cars.

7.9 Estonia

7.9.1 Overview of Findings

In Estonia, all sectors have implemented policy packages to address energy efficiency; hence energy efficiency improvements take place in all sectors. Estonian experts agree

that the public sector, the residential sector (with a focus on buildings), the industry sector and the transport sector make only some progress.

Concerning Article 7 of the Energy Efficiency Directive (EED), Estonia has decided to introduce an energy efficiency obligation scheme (EEO) in combination with alternative measures. However, there are still only plans to implement an obligation scheme. The alternative policies are based on an energy and CO_2 tax and funding schemes in several sectors.

Buildings and industry are a priority for energy efficiency improvements and are characterised by a comprehensive policy package including financial incentives, regulatory measures and information campaigns. In other sectors, most of the policies are ongoing. Several planned measures exist, however they have not been implemented yet. Furthermore some policy gaps exist, which should be addressed with appropriate policies and measures. For example, the policy package for appliances is not balanced and the market for energy service companies (ESCOs) does not yet function very well. 53% of the Estonian experts interviewed, mentioned that the ESCO market makes no progress.

7.9.2 Sectoral Progress

The **governance framework** is structured by the National Reform Programme Estonia 2020 and the National Development Plan for the Energy Sector until 2020. Other national strategies and plans to reduce greenhouse gas emissions especially in the building sector were abandoned in 2012 and 2013. Furthermore, the Climate and Energy Agency (KENA) is not in place anymore. Concerning the implementation of Article 7 of the EED, Estonia has plans to introduce an energy efficiency obligation scheme in combination with alternative measures. However, programmes to enhance the energy service market were implemented. The Estonian financing institution KredEx supports several energy efficiency measures.

In the **public sector** some municipalities have drawn up sustainable energy plans and the government plans to make them mandatory for every municipality. There are requirements to purchase products based on energy efficiency specifications (Public Procurement Act). KredEx prepares guidelines for nearly Zero Energy Building (nZEB) design. In public buildings, energy audits and Energy Performance Certificates are mandatory.

The **building sector** is influenced by energy efficiency requirements and Energy Performance Certificates (EPCs) under the Energy Performance of Buildings Directive (EPBD). These EU measures are supported by large soft loans and financial incentive programmes. All measures are ongoing. The aim is to renovate 2.9 million m^2 of residential space by 2022. In the last years, Estonia introduced a qualification system for building professionals and energy auditors and supports information and education campaigns. All Estonian experts agree that the building renovation makes good progress.

To increase the energy efficiency of **appliances**, mainly EU Directives were implemented. A sustainable energy week and some other information campaigns inform consumers about energy efficient products. The policy package for appliances was not improved since 2011.

The policy for the **industry and tertiary sectors** is rather well balanced. Voluntary Agreements have been in use since 1999 and information campaigns provide companies with materials on energy conservation. A financial incentive programme was introduced with the third NEEAP to support innovative solutions. The research and development (R&D) activities in the industry sector are comprehensive but did not change or improve in the last years.

Most measures in the **transport sector** are only planned. The transport plan was extended for the period 2014-2020. All other programmes are ongoing such as energy conservation criteria in public procurement, mandatory speed limits and mandatory technical inspections. The Green Investment Scheme supports energy efficient busses and trams. Information and advice programmes are also ongoing.

7.9.3 Recommendations

Further improvements to the policy package could be the following:

- Many targets were introduced for the period until 2013 but no further strengthening or continuation of these targets was envisaged. Only the development plan and the reform programmes are ongoing. An energy efficiency obligation scheme is planned, but there are no concrete plans for implementation. This should be done as a first step. Furthermore, the Climate and Energy Agency (KENA) was closed. A new national energy agency should be established to structure and organise the energy efficiency processes. The energy efficiency funds should better support energy measures and requirements (for example to reach the building requirements). The energy service market is still not very developed in Estonia. All in all, there is still room for improvements in the **governance framework**.
- In the **public sector** there are plans to make energy action plans mandatory for municipalities. This should be realised. Public procurement processes are characterised by guidelines and requirements for energy efficiency. These requirements could be strengthened. In addition, there are currently only plans to construct nZEB.
- Within the **building sector** some financial incentive schemes and information campaigns were implemented. However, a large number of single-family houses need renovation but they are not eligible for support. In addition, the programmes could be speeded up. Furthermore, education and training for professionals should be improved.
- The policy package in the **appliance sector** is not very balanced. Economic incentives, a voluntary labelling scheme, education and training programmes

and large information campaigns are missing. Appliances seem to have a low priority in Estonia. Only EU requirements such as the Ecodesign Directive were implemented.

- In the **transport sector**, the progress is slow, especially in terms of planning and taxation (e.g. to encourage possibilities to walk and cycle, CO_2 taxation). The planned measures should be implemented. Existing policies, like information programmes, could be further improved. The government has not yet targeted this sector sufficiently.

7.10 Finland

7.10.1 Overview of Findings

Finland has continued its relatively ambitious energy efficiency policy. According to the expert survey, the majority of experts stated that at least a few further policies have been introduced in the last three years. The document screening confirms that some additional measures have been implemented, but rather improvements of existing measures have been realised[28]. According to the conducted expert survey the overall ambition is mostly assessed as generally high or at least ambitious in a range of sectors. Experts identify the voluntary agreements in all sectors as a strength of the Finish energy efficiency policy; these have a long tradition in the country and have shown to be successful in the past according to experts. Moreover, fairly good harmonisation of energy efficiency policies from the EU to the national level and to the local level has been achieved in Finland.

7.10.2 Sectoral Progress

Concerning the **governance framework**, the Finnish Parliament passed the Climate Act, setting a target to cut 80% of emissions by 2050 (compared to 1990). Article 7 of the EED is to be fulfilled with alternative measures and no energy efficiency obligation scheme is planned to be implemented. The majority of experts (64%) believes that savings to meet the requirements under Article 7 are likely to be achieved (among the highest ratings of all Member States). A similar percentage believes that Finland is on track to meet the nearly Zero Energy Buidling (nZEB) standard for new buildings by 2020. The national energy agency Motiva is an important element of the Finish governance framework as it is in charge of providing advice, networking, campaigning, monitoring of measures and impact assessments.

Concerning the **public sector,** some progress was made in the last years. The implementation of policies on sub-national level has been successful. Nearly 140 local authorities have signed the energy efficiency agreement for local governments (status: beginning of 2014). Regarding public procurement, the eco-procurement network has

[28] Annex of NEEAP is not available in English and could therefore not be included in the analysis.

been expended and according to a government resolution new and sustainable cleantech solutions (also covering buildings) are to be promoted in the future. The cleantech procurement advice service is still in place and operating. However, the level of knowledge about energy efficiency investments and associated benefits were pointed out to be heterogenous among interviewed experts. Public building requirements (new building codes) are reported to be strict in Finland and the majority of surveyed experts see some (45%) or good progress (33%) made in the exemplary role of public buildings.

Numerous measures aiming to improve the energy efficiency of **residential buildings** were already implemented in 2011 and continue to be valid. Experts reported that houses built today have either a Passive House or near Passive House standard, and energy efficiency requirements for new buildings are rated as very effective or partly effective (62% and 38% respectively). It is mentioned that a beneficial circumstance for building renovation is the high rate of private use by building owners. Additionally, for larger property owners (e.g. rented apartment complexes), voluntary agreements to foster energy efficiency are established. Overall, the implementation progress in the renovation of buildings is assessed to be “good” by 37% of experts, while 56% of them indicate that “some progress” has been made. The energy efficiency requirements for renovated buildings received similar ratings. On the other hand, energy certification of buildings has received the lowest percentage with respect to effectiveness, 27% of experts ranking it as "not effective".

Regarding energy efficient **appliances,** no progress was found based on the document analysis. However, all experts indicated that smart metering, affecting appliance use, is very to partly effective (29% and 67% respectively). Energy labelling of products is ranked similarly.

With respect to **industry and tertiary sector,** the document screening has not revealed significant changes. However, for industry, 58% of surveyed experts reported good progress in the implementation of policies, only 2% indicated that no progress was made. Voluntary agreements are the main instrument in these sectors and are in place for non-residential buildings as well as for industrial processes. In case of small and medium sized companies, relevant associations are rather targeted than single companies (e.g. trade associations, hotel associations, industry organisations). Energy audits for companies as a measure were attributed by far the highest expert ratings in an cross-country comparision, 42% of experts see this measure as very effective. Experts nevertheless point out that Finland does not provide direct public assistance, such as specialized consulting services, to support companies of the industrial sector.

In the **transport sector** the number of measures has stagnated based on the document screening and most measures have been maintained. However, the expert survey indicates that the implementation of measures has improved: one quarter of experts reports good progress and nearly 70% of experts report that at least some progress has been made.

7.10.3 Recommendations

Further improvements to the policy package could be the following:

- Regarding the **governance framework**, the establishment of an energy efficiency fund could contribute to achieve energy savings in the other sectors. For instance, in the public and buildings sector, financial assistance measures could become an additional benefit, while for the industrial and commercial sector, support for specialised consulting is recommended.
- In the **public sector**, the level of knowledge on energy efficiency and associated benefits could still be enhanced as reported by experts. Moreover, financing for energy efficiency investments is a challenge and additional public funding is viewed as necessary, particularly with respect to existing buildings on the municipal level. Active public procurement mechanisms in favour of more efficient technologies and services and addtional financing at the local government level are potential areas for improvement.
- Though policies in the **building sector** have already been well designed and implementation has been successful, there is still room for improvement. Expert Interviews showed that stronger efforts towards the improvement of the exisiting building stock should be made in the future. In particular, additional financing for (complex) rented out buildings is currently missing. Moreover, as shown above, the certification of buildings has received the lowest percentage with respect to effectiveness, 27% ranked it as being not effective. This circumstance should also be addressed by future policies.
- With regard to **industry and tertiary sector**, experts point out that Finland does not provide direct public assistance, such as specialized consulting. Experts state that this type of public support could be a powerful tool for both, the industry and commercial sector in the future. Additionally, the energy audit obligation for large companies could bring further improvement.
- In the **transport sector,** experts see room for further improvement concerning fuel consumption of new cars and recommend further modification of the existing tax on vehicles to favour more efficient cars (e.g. hybrids, electric) and biofuels (second generation). In addition, experts point out that public transport (e.g. rail) could still be improved (particularly with respect to the population density in the south). Also, new and innovative solutions to guarantee at least a moderate level of public transport in areas with low population density should be developed.

7.11 France

7.11.1 Overview of Findings

According to expert opinion, France has made medium progress in further developing its energy efficiency policy in the last three years. Overall, the current political dynamic

with regard to energy efficiency is considered good, which is also reflected in new ambitious legislation (i.e. the Law on Energy Transition). However, nearly two thirds of consulted experts believe that the overall level of ambition of the energy efficiency policies is low or only ambitious in a few sectors. Moreover, the majority of experts either respond that “few additional policies” (39%) or “a range of additional policies” (33%) have been introduced, while only 8% see many additional policies implemented. 20% even responded to see “no or very little progress” with regard to France’s energy efficiency policy. These assessments can be differentiated according to the sectors: for instance, while the policy package for the residential sector is well balanced, the service sector requires additional political action in terms of supportive and regulatory measures. With regard to achievement of the Energy Efficiency Directive (EED) targets, France mainly relies on its well-established energy efficiency obligation, called Energy Saving Certificates Scheme. However, despite strengthened targets for the period 2014-2017, expert assessment with regard to the likelihood of Article 7 target achievement has been rather pessimistic, with 43% responding that the target is likely not to be achieved and only 18% responding optimistically. One reason for this might be the low involvement of industry in the Energy Savings Certificates scheme, where it represents only 20% of the produced certificates.

7.11.2 Sectoral Progress

The overarching energy efficiency **governance framework** has improved in the last three years. Particularly, the new Law for Energy Transition reflects the government's increased priority for energy efficiency: it has updated the long term objectives (halving overall energy consumption by 2050 compared with 2012) and reinforced the key policies (white certificates, tax credits, etc.). Additionally, there have been increasing efforts on the sub-national level to define local and regional action plans as well as creating information and support platforms to promote energy renovation in the private residential sector. The targets of the Energy Savings Certificate System have been substantially increased and its scope extended to transport. The energy efficiency obligation is implemented through this extended Certificate Scheme in combination with alternative measures. Further economic incentives to increase energy efficiency are provided through the increase of existing and the introduction of new energy taxation.

According to the document screening hardly any new measure has been introduced in the **public sector** since the last NEEAP. The existing policies providing guidelines to public authorities regarding sustainable procurement have been maintained and updated and requirements regarding targets and proceedings as laid down in the existing public sector strategy have been further specified. This includes the obligation for Ministries to create action plans to follow up on the recommendations resulting from energy audits. Energy audits have been properly carried out for the entire public building stock. Overall, experts consider the central administration to fulfil its exemplary role in energy efficiency quite well.

In the **building** sector a range of new measures have been introduced to further improve the awareness for and availability of energy efficiency related information and advice for investors and users. To tackle the issue of insufficient training of building professionals , the PRAXIBAT initiative has been launched. Furthermore, existing policies have been mostly upgraded or extended, providing an overall balanced policy package. The regulatory framework has been improved through adoption of stricter thermal performance requirements of new buildings (RT 2012) and existing financial incentive and financing programs have been extended and/or simplified.

With regard to domestic **appliances**, little to no progress beyond the existing policies can be identified, apart from the implementation of several research and development (R&D) projects on smart appliances and home automation. Existing policies such as financial incentives for boiler replacement through the eco loan and the tax credit scheme are however being continued.

There are only few new policies targeting **industry, tertiary sector, and agriculture** that have been introduced since the last NEEAP. Besides a new regulation on running hours of lighting installations (including signs and billboards), a soft loan scheme for the financing of installations of energy-efficient equipment has been set up. However, budgets for existing financial incentive schemes for either one of the three sectors have been either reduced or their scope limited, leaving few opportunities in this regard. Especially the service sector is insufficiently addressed by energy efficiency policy. Programmes to support R&D are continued without major changes.

According to the document screening, there have been some new measures targeting energy efficiency in the **transport sector** since 2011. Regarding the regulatory framework, most notably the energy saving certification system has been extended to providers of automobile fuels for consumption. Also in terms of economic incentives, France has maintained and raised its high tax on car fuels and strengthened the fee rate of its environmental feebate scheme (bonus-malus). All other existing measures in the different elements of the policy package (e.g. the successful voluntary agreements) have been maintained and improved, except the Kilometre eco tax on trucks, which has been withdrawn due to strong regional opposition.

7.11.3 Recommendations

Further improvements to the policy package could be the following:

- As regards the **governance framework**, there is still room for improvement regarding the relationship and coordination between national policies and the local level. As one of the major challenges for energy efficiency policy is to unlock investment in the private residential sector, the bottom-up integration of currently emerging innovative financing scheme designs for building renovations on the local level could be beneficial. The energy efficiency obligation should more directly reach out to the industrial and commercial sectors.

- In order to achieve the overarching targets set for the **public sector** in compliance with the EED, the renovation rate of public buildings will need to be increased. In order to simplify and accelerate the process, rules regarding the management and eligibility of different types of public buildings for financial incentives should be harmonized. Furthermore, supportive measures to facilitate the implementation of energy efficiency projects in public premises should be implemented.
- The policy package for the residential sector is already quite balanced. Recommendations for improvement, if any, relate to the dwindling implementation of energy efficiency actions in private **buildings**. Here, promotional measures targeting training of building professionals as well as the implementation of the planned fund to guarantee loans for home renovation point in the right direction and can contribute to an increased uptake.
- In order to improve energy efficiency in the field of domestic **appliances**, the introduction of financial incentives for very energy-efficient appliances with high savings potential as well as provision of training to retail staff is recommended.
- The policy package for **industry and tertiary sector** should be amended with regard to different elements. For once, building regulation should be adopted that applies to all buildings of the service sector, including the existing ones. Furthermore, additional financial incentives targeted at the industry and service sector for implementing energy efficiency investments within or besides the Energy Saving Certificates will be necessary in order to harness the potential better.
- After the withdrawal of the environmental tax for road transport (trucks), a different mechanism to fund rail infrastructure projects in the **transport sector** should be established. Also generally, additional efforts should be made to promote the development of sustainable transport systems in order to support the achievement of overarching environmental targets.

7.12 Germany

7.12.1 Overview of Findings

Since the second NEEAP, Germany has continued to improve its energy efficiency policies, however progress differs for individual sectors. In a cross-sectoral comparison, the highest progress has been made in industry and the tertiary sector according to experts and the document analysis.

Germany is among the countries that have progressed relatively well since the second NEEAP (country progress indicator: 5 out of 28; for more information on the indicator, please see the section on “Policy Developments according to the Expert Survey”). This corresponds well with the result of the document analysis, which revealed significant changes in industry and the tertiary sector (e.g. incentives for the implementation of energy management systems through the peak equalisation instrument; “peak burden

relief"). Policy packages in other areas were improved, as well, for instance, in the residential sector through scaling up energy saving checks and improved support of the Market Incentive Programme.

Even though German experts assess the ambition of energy efficiency policies generally as high, the study identified options to improve the German policy landscape. Among other things, it appears crucial for the Government to mobilise capacities in terms of human and financial resources and to more comprehensively inform the public about costs and benefits of building refurbishments. Apart from that, more ambitious policies are required in the transport sector.

7.12.2 Sectoral Progress

Concerning the **governance framework**, the implementation of measures announced in the recently released National Action Plan on Energy Efficiency (NAPE) and the National Action Programme Climate Protection 2020 will be an important challenge, although staff capacity in the government increased. Article 7 of the Energy Efficiency Directive (EED) is to be met with alternative strategic measures and not with an energy efficiency obligation scheme. Half of the surveyed experts think, however, that the Article 7 savings target is not likely to be achieved. The effectiveness of the Energy Efficiency Funds existing since 2011 is ranked similarly low due to its relatively small size.

For the **public sector,** which is small in terms of energy consumption but should lead by example, the number of recently introduced policy measures mentioned in published documents (NAPE, NEEAP) is low. Already implemented measures like public procurement, the Energy Star and the Blue Angel labels are ongoing. Experts point out that the federal structure in Germany is a general challenge. The Federal States (Länder), and more so the local authorities under their supervision, own a high share of public buildings and are therefore highly important for a successful public sector energy efficiency policy design and implementation. Several Federal States have already established an efficient public building energy management system and some have drawn up energy refurbishment plans. However, experts point out that, overall, deep renovation of public buildings is still on a low level. This relates to the fact that a strategy/plan for the renovation of governmental buildings is still missing. A nearly Zero Energy Building (nZEB) standard has not been defined so far. Only 19% of experts in the survey see good progress in the exemplary role of public buildings.

Numerous activities, which aim to improve the energy efficiency of **residential buildings** have already been in place in 2011**.** This includes, for instance, the loans and grants for deep renovation and construction of low energy homes provided by the KfW programmes, mostly based on the KfW Efficiency House standard (for Good Practice description see below). In comparison to these already implemented policies, rather few additional measures have been introduced, however, several programmes have been strengthened, including the KfW programmes.

Regarding energy efficient **appliances**, only little information is available on the progress. Energy saving checks for households have been scaled up, but experts claim this would still need to be expanded further to sufficiently address low-income households. An additional measure is the Refrigerator Exchange Programme for low-income households introduced after 2011. Moreover, the document screening suggests that measures, which were already installed in 2011, are ongoing. Energy labelling of products is perceived as the most effective policy instrument by German experts (87% partly or very effective). The National Top Runner Initiative, which seeks to drive the uptake of very energy-efficient appliances through a combination of actions, is about to be launched.

With respect to **industry, tertiary sector**, **and agriculture,** the document screening reveals that several new measures to improve energy efficiency have been added compared to the last NEEAP, particularly in the industry and tertiary sector. According to the expert survey, the actual implementation progress was also ranked highest in the industry sector. Important drivers are the obligation to implement energy audits or energy management systems in exchange for partial exemptions on energy taxation and/or the renewable energy levy, as well as new financial incentive programmes for energy efficiency in both cross-cutting and process technologies. Local and regional energy efficiency networks for companies were also among the positive developments mentioned by the experts. Moreover, a KfW programme for commercial buildings has been introduced.

In the **transport sector,** a number of measures have been introduced. Already existing measures have been maintained according to the document screening. However, this finding contrasts with survey results indicating that instruments are not effective. According to experts, only insufficient progress was made in the transport sector (40% even stated that no progress at all was made). It is mentioned by experts that opportunities have been missed in the past: The current decrease of fuel prices would have allowed to increase taxes and/or introduce bonus-malus systems related to CO_2 emissions of the vehicles.

7.12.3 Recommendations

Further improvements to the policy package could be the following:

- In order to strengthen the **governance framework** for energy efficiency in Germany, the government should enhance its capacities through the provision of more funds and staff. This is necessary in order to achieve energy efficiency targets.
- In the **public sector** it is key to realise the 3% target of annually renovated floor area, which would contribute to the exemplary role of public buildings. Related to this, a national strategy/plan for the renovation of governmental buildings should finally be published and support for Federal States in implementing measures given. Moreover, missed opportunities, such as the mandatory

introduction of the Passive House Standard for new public buildings in the recently revised EnEV, should be remedied.

- Though policies in the **building sector** have already been well designed and implementation has shown to be successful, experts pointed out that the number of conducted energy advice and audits has significantly decreased in recent years. This development partly relates to a bad image campaign on building insulation material and cost vs. savings in the national media. Experts stress that targeted advice for households should be strengthened and embedded in local networks of actors. KfW financial incentives and loans will need to be increased, but focussed on deep renovation and nZEB or Passive Houses.
- In the case of the **industry and tertiary sector** the design and implementation of new and announced measures in the NAPE will be crucial (e.g. of the competitive tendering programme). The sectors will normally only easily implement measures with short payback time. In the future, national efforts should support the implementation of technical measures with long payback times. To harness the potential, the amount of financial incentives provided will need to be significantly increased and effectiveness of the obligations linked to energy tax/renewables levy exemptions to be improved. Some local authorities also support measures in these sectors by municipal grant programmes. Many experts recommend extending the competitive tendering programme towards the heat market. Additionally, financing of local and regional energy efficiency networks should be secured. In a pilot phase, these have shown to be successful in facilitating the uptake of energy efficiency.
- The **transport sector** will need particular attention in the future. Complementary actions are needed especially in this sector, according to experts. This process should start with the integration of transport measures in strategic official documents. Even measures proven to be successful, like speed limits on motorways, are missing in Germany. Measures like increased taxes and/or bonus/malus systems related to CO_2 emissions of the vehicles should be considered too. Furthermore, instruments counterproductive with regard to energy efficiency like the commuter allowance should be abolished and the strong focus on the construction of new roads instead of priorising the expansion and maintenance of rail infrastructure should be changed.

7.13 Greece

7.13.1 Overview of Findings

Based on the screening of the NEEAP and on the opinion of Greek experts, Greece has made relatively little progress since the second NEEAP. 84% of the surveyed experts think that no or only a few additional policies were introduced in the last three

years and almost three quarters of experts rate Greece's ambition as low or ambitious in a few sectors only.

The Ministry of Energy is the most important actor on laws and regulations for energy efficiency. However, with the economic and financial crisis, the political focus has shifted away from energy efficiency. Local authorities are prepared to implement energy efficiency policies and programmes, and are promoting more green and sustainable procurement. The Centre for Renewable Energy Sources and Saving (CRES) is responsible for information and demonstration projects and is the intermediate agent for EU funding programmes. However, CRES has no own funding programmes and was faced with budget cuts.

The crisis has resulted in a decrease of energy consumption in the domestic sector. Similarly, the reduced economic activity in the service and industry sectors are causing lower energy demands. This reduction in energy consumption is contributing to the achievement of the Art. 3 energy efficiency targets, although with serious social impacts, such as fuel poverty. A large part of the population is unable to pay their electricity and fuel bills, leading to under-heated homes. Energy efficiency has therefore now become a social problem and challenge in Greece.

While it is unclear to which extent the decrease of energy consumption is caused by the reduction of economic activity or by energy efficiency legislation, for Greek experts the crisis is the main driver behind energy consumption reduction. A large majority of experts (84%) also thinks that Greece will not meet its obligation of all new buildings being nearly zero energy buildings (nZEB) by 2020. Greece has introduced "Green Inspectors" who are responsible for the implementation of the Energy Performance of Buildings Directive (EPBD). All buildings sold or rented need to be certified by a Green Inspector. A catalogue of registered building auditors and certifiers is available. In the residential sector, significant use was made of structural fund for the renovation of buildings in the past years. More than 100.000 houses have been renovated.

7.13.2 Sectoral Progress

The energy efficiency **governance framework** has remained largely unchanged since 2012 and implementation of Art. 7 EED relies on alternative measures. The only significant addition concerns measures to support the development of Energy Performance Contracting through the development of a standard contract and the removal of regulatory and non-regulatory barriers.

Even though the **public sector** received an above average rating in the previous NEEAP screening, the lack of funding represents a key challenge for energy efficiency in this sector. Provisions for energy management systems were implemented in the public sector and an Interministerial Commission for Public Procurement has been set up. However, the majority of public buildings are rented, which presents a significant obstacle for their renovation.

A financing programme for the renovation of residential **buildings** is in place, the SEH Programme. However, the funding of energy audits has been terminated. The EU funded project 'BUILD UP Skills' has been implemented to strengthen training and qualification of the building sector workforce. The Greek government is working with a committee of experts to transpose the recast of the EPBD.

The EU directives are transposed to increase the energy efficiency of **appliances**. Additionally, plans for the gradual replacement of all existing final electricity meters by smart meters exist. Furthermore, the installation of telemetry systems for large LV consumers are expected to be completed in 2015. No policies for consumer awareness or training are in place.

New economic incentives for investments were implemented in the **industrial sector**. Among them are programmes to strengthen SMEs and manufacturing enterprises. Furthermore, several research actions were launched.

Major progress in the **transport sector** has been made before the Olympic Games. A strong development of public transport continued until 2009. Especially Athens and Thessaloniki invest in their metro lines and in both cities prices for public transport have been decreasing. Due to economic crisis, there is less use of individual cars in Greece. In the **transport sector**, many initiatives to incentivise the renewal of the vehicle fleet are ongoing. Additional favourable tax incentives and subsidies for the purchase of electric vehicles have been implemented. Yet, recharging points are missing. Information and awareness campaigns exist.

7.13.3 Recommendations

Further improvements to the policy package could be the following:

- With regard to the **governance framework**, it will be important to put energy efficiency back on the agenda of the Ministry of Energy, with clear measures to reach the targets of Art. 7 EED. Additionally, the work of local authorities should be supported either from the national level or with help of the EU structural funds. With a financing programme, new jobs could be created to increase capacity of the local authorities.
- For the **public sector**, it is recommended to introduce a funding programme for public buildings in order to realise the 3% renovation target. Additionally, follow-up and control mechanism of the implementation of national regulations and performance standards should be set up to evaluate actions. Currently, a lack of know-how and competencies exists in the public sector. Training and capacity building workshops would improve this situation.
- Cogeneration units are not allowed in residential buildings. A change of legislation would help to realise more energy savings in the **buildings sector** and potentially assist in combatting fuel poverty.
- In the **industry and tertiary sector**, a programme for successful demonstration projects and a dissemination campaign are needed to motivate actors for

energy efficiency. Moreover, energy saving targets could be set for companies to incentivise efficient use of energy.

- In the **transport sector**, investments in infrastructure (roads, metro, rail, airport) have been made. To improve the efficiency of the transport infrastructure, the government could develop a clear transport strategy with a long term vision promoting modal shift to rail, bus and cycling.

7.14 Hungary

7.14.1 Overview of findings

The screening of the NEEAP and the findings from the survey conducted with Hungarian experts show that the policy framework has not significantly improved since 2012 and still lacks ambition. Most experts think that the EED savings target is not likely to be achieved. Energy prices are regulated, which maintains them at an artificially low level, and does not provide incentives to invest in energy efficiency. Many energy efficiency measures are still in the planning phase, while measures in place lack either ambition or financial support. Experts underline that EU co-funding for energy efficiency measures is high, at 85%. They believe that this high rate prevents the emergence of effective financing schemes: investments are decided on the basis of the eligibility to EU funds, not on cost-effectiveness. Experts point to uncertainty in the policy framework as a major barrier to investment in energy efficiency: retroactive change in taxation of revenues from renewables have been implemented in the last years, and investors fear the same could happen to energy efficiency investments.

7.14.2 Sectoral Progress

With respect to the energy efficiency **governance framework**, the government has decided to implement alternative policy measures instead of an energy efficiency obligation scheme. Several strategies on energy and climate have been adopted, with some of their provisions impacting energy efficiency. A building Energy National Strategy was started in 2015, aiming at energy savings in new and existing buildings. However, experts consider that the policy measures only provide a weak framework, as energy efficiency is not regarded by the government as a priority, contrary to the supply side. They estimate that the government's estimate of the 2020 BAU consumption is too high. Experts also note a strong centralisation and little room for action from local authorities. The national and local energy agencies have been maintained, however no information is available on their activities. With regard to financing opportunities, the fund dedicated to green investments is still in place and a low-interest financing for ESCO activities is planned.

In the **public sector**, the 3% renovation target only holds for buildings owned by the central government (i.e. local authorities not included). An Energy Efficiency Operational Programme is starting in 2015 and has been allocated around €240 million

for the period 2014-2020. Legal provisions are in place to implement green public procurement. At the local level, 24 cities have made a voluntary commitment to improve energy efficiency. The NEEAP states that financial support for modernisation of municipal buildings is available in the Regional and Urban Development Operational Programme. Experts point to an ownership issue as holding back investment in energy efficiency in public sector: many public buildings are owned by the state, but their facility management remains with municipalities. A regional programme for energy saving investments has been terminated in 2013 and has not been replaced since. Educational activities are ongoing, with education material provided to schools and training being offered to local government.

The policy package in place for the **buildings sector** is seen as weak by experts, with many measures still in the planning phase. It largely builds on the transposition of the Energy Performance of Buildings Directive (EPBD): energy certification of buildings and energy labelling of products are seen as the most effective energy efficiency policies. Still, three quarters believe that Hungary is lagging much behind in meeting its obligation that all new buildings be "nearly zero-energy buildings" by 2020. Most programmes that were in place in 2011 to incentivise investments are still ongoing, such as the Green Investment Scheme Programmes or the National Energy Saving Loan, but lack effective funding. However, there is no information in the NEEAP on potential new programmes, and experts lament the lack of call for proposals for energy efficiency investments in residential buildings. For instance, no funds from Structural funds were available in 2014. Several information programmes are in place to raise awareness through public campaigns, promotion of pilot projects, however their impact is unclear. An information website is planned to be established. Smart metering pilot projects are ongoing.

The policy package for **appliances** is essentially based on the EU Ecodesign and EU Energy Labelling Directives and is complemented by information and educational activities. However, there are no economic incentives to purchase best available technologies, and no training for retail staff and / or supply chain actors. Several initiatives are in the planning phase, such as an Appliance Replacement programme and a green loan programme.

There are only limited policies and measures for the **industry and tertiary sectors**. Experts describe the energy efficiency market for industry and services as driven by ownership and energy prices, without policy support. A Virtual Power Plant Programme aims to incentivise businesses to lower their consumption by sharing good practices. Voluntary agreements are still in the planning phase, as are an awareness campaign and an energy audit mentor service that would provide direct consulting services. Among ongoing measures: the National Network of Energy Engineers is responsible for providing information to business in the SME sector, a programme targeting mitigation of energy use in SMEs. However, energy audits for industry and financial for SMEs are rated as largely ineffective by experts.

In the **transport sector**, a Transport Infrastructure Development National Strategy was adopted in 2014. Train and railways modernisation programmes and a bus replacement programme are ongoing. In addition, tax incentives have been established for electric and hybrid cars and an action plan has been adopted for the development of electromobility infrastructure, with 25% of carbon market revenues earmarked to fund the programme, amounting to around HUF 7 billion in 2015 (22 million Euros).

7.14.3 Recommendations

Further improvements to the policy package could be the following:

- The energy efficiency **governance framework** should be strengthened, either through further alternative measures or an energy efficiency obligation scheme. Overall, uncertainty in the policy framework must be decreased in order to allow investments.
- In the **public sector**, local authorities should be given more competence and financial means to take action. It is recommended to ensure that Structural Funds are used to support targeted needs in **public buildings** renovation and **industry** efficiency, through preferential loans for instance.
- In the **residential buildings sector**, support measures should be scaled up and better targeted at poor households in energy inefficient housing. This would provide a more cost-effective protection for vulnerable households than regulated tariffs.
- In the **industry sector**, voluntary agreements should be implemented and monitored. Structured energy audit and management services should be readily available.
- The **transport** policy could encourage more intermodal transport.

7.15 Ireland

7.15.1 Overview of Findings

According to the screening of the NEEAPs and the opinion of Irish experts, the level of ambition in Ireland has decreased since the last NEEAP. For a majority of experts, the Irish energy efficiency policy is now rather low or ambitious only in a few sectors (57% compared to 39% in previous assessment). Almost two third of experts (62%) reported only few additional policies in the last three years.

This report has identified the industry and the buildings sectors as two 'key strength' elements of the Irish energy efficiency policy. The networks for large industrial companies have been maintained and offer advice, training and information. Building efficiency is encouraged through the implementation of a detailed certification system. In addition, an Energy Supplier Obligation Scheme, has been introduced in 2014, and provides a saving target for energy suppliers. Its impact may take more time to fully unfold. Regarding financing needs, most interviewed experts rate the national energy

efficiency fund as not effective at all. In addition, 40% of them think that the savings target from the Energy Efficiency Directive (EED) is not likely to be achieved.

7.15.2 Sectoral Progress

With respect to the energy efficiency **governance framework,** Ireland has established an Energy Efficiency Obligation scheme in 2014, which aims at delivering savings from energy suppliers that are mandated to meet specified annual targets every year by 2020. 42% of energy savings up to 2020 are to be achieved through the Scheme. A new Energy Efficiency Fund has been set up in 2014 along with a National Energy Services Framework (NESF) to promote the use of the fund via innovative finance arrangement. While the Irish White Paper on energy is still valid, the government has launched the debate on an updated energy policy strategy through the publication of a green paper. The Sustainable Energy Authority of Ireland (SEAI) centralises the energy policy implementation.

The **public sector** has an efficiency target for 2020 of a 33% improvement compared to a 1990 baseline. Most programmes that were under implementation in the 2012 review are still in place: on procurement and tenders, on public buildings retrofit and on efficiency networks in the public sector. Two programmes, for CHP and renewable heat deployment programmes have been ended whereas no new programme has been started. Experts describe varying levels of public sector commitment: some public authorities are championing change, others are lagging behind.

The energy certification of **buildings** and the efficiency requirements for new buildings are the two major policy instruments in the buildings sector. The building regulation requires efficiency levels that are among the highest in the EU. However, for a majority of experts Ireland will not reach its obligations under the Energy Performance of Buildings Directive (EPBD) that all new buildings be nearly zero-energy buildings (nZEB) by 2020. Most incentives for residential buildings efficiency have been continued, although some have seen their scope and/or funding reduced. Ireland is also implementing a training programme to build skills in the sector. While experts report a positive impact of policies on buildings renovation, further policies are needed to stimulate deep renovation. Especially, the financial support programme for refurbishment has been terminated, and has not been replaced, despite plans to build a scheme similar to the UK Green Deal. Targeted advice for households is also seen by experts as poorly effective.

The policy package for **appliances** is essentially based on the EU Ecodesign and EU Energy Labelling Directives, and is complemented by a labelling programme for office equipment. However, there are no economic incentives to purchase best-available technologies, and no training activities for retail staff and / or supply chain stakeholders.

While there is no target for efficiency in the **industry and tertiary sector**, the Large Industry Energy Network (LIEN) and the SME programme, which promote energy management in large industries and SMEs, are ongoing. The LIEN is described below

in the good practices section. No new policies has been registered in this sector, while service sector programmes have been cut due to austerity measures and have therefore curbed efficiency efforts in the services sector. Similarly, SMEs have been hit by the economic crisis and have cut down in energy efficiency investments.

The ambition in the **transport sector** has been scaled down, with for instance significantly lower targets in the electric vehicles deployment plan than in its predecessor. The main instruments are emission-based taxation of vehicles and information and advice campaigns. There is no spatial and transportation planning strategy and as a result low results in decreasing energy consumption in this sector.

7.15.3 Recommendations

Further improvements to the policy package could be the following:

- With respect to the overall energy efficiency **governance framework**, financial support for energy efficiency has been curtailed by austerity measures and should be scaled back up until 2020. Alternatively, energy efficiency obligation targets could be strengthened further.
- The **public sector** target provides an impetus to public sector action, but in the absence of new measures efficiency efforts might not be sustained in the future. Experts estimate that further engagement with public authorities is needed to achieve more efficiency in the public sector. Information is lacking on the renovation rate of public buildings, specific measures to encourage public building renovation should be taken.
- In the **residential buildings sector**, further measures are required to encourage deep buildings retrofit, including improved funding opportunities and better information of households.
- In the **industry and tertiary sector**, measures to support and develop the energy performance contracting market would help overcome the hurdle of longer payback times that prevent some energy efficiency measures from being implemented.
- A strategic action plan and ambitious targets in the **transport sector** are needed to achieve significant improvement in this sector.

7.16 Italy

7.16.1 Overview of Findings

Based on the document screening and the results of the expert survey, medium progress has been identified in Italy's energy efficiency policy since the second NEEAP. In comparison with other EU countries however, progress has been among the strongest. Nonetheless, in particular the process for issuing decrees for the transposition of the 2012 Energy Efficiency Directive (EED) is slow, which blocks potential actions that would be taken otherwise, particularly on a local and regional

level. There still are structural problems related to the funding of Energy Service Company (ESCO) market activities, with private financial institutions insufficiently engaging in the field. However, according to Italian experts, reluctance within the banking sector appears to slowly diminish due to the amended legislative framework, which is likely to benefit the development of the ESCO market.

7.16.2 Sectoral Progress

Regarding the **governance framework**, there have been some substantial developments since the last NEEAP, particularly in the field of financing and the establishment of favourable framework conditions for energy services. Italy newly adopted a National Energy Strategy, in which primary energy saving targets were formulated. Targets of the well established White Certificate System, through which Italy complies with the energy efficiency obligation, have been further strengthened. With regard to the financing of energy efficiency measures, adequate measures have been taken with the establishment of the Fund for home purchase and/or renovation (plafond casa) and the National energy efficiency Fund. The latter partly aims to promote the ESCO market by means of conditional lending.

The **public sector** still lacks an explicit energy efficiency strategy beyond the formulation of sectoral saving targets. The already existing conducive legislative framework has been amended by a small number of new measures, particularly in the field of financing. Extended financing options for energy efficiency improvements in public buildings and technical installations are now available through the Thermal Account Scheme (Conto Thermico) as well as the National energy efficiency Fund. Furthermore, the green public procurement regulation has been extended to additional product groups and minimum requirements have been strengthened. Some support for R&D is provided through the publicly funded programme Ricerca di Sistema Elettrico (RdS). Provisions of the Energy Performance of Buildings Directive (EPBD) regarding mandatory nearly Zero Energy Building (nZEB) levels in public buildings have been transposed into national law.

Regarding its activity to promote the energy efficiency of **residential buildings**, Italy has implemented a range of new policies and regulations addressing the different elements of the policy package. In comparison to the time before 2012, additional efforts are being made regarding the provision of financial incentives and financing with e.g. the tax deduction scheme being extended and new financing opportunities created. Several measures have been introduced to improve transparency of building energy performances and the quality of respective information, including smart meter pilot projects. All existing measures have been maintained or strengthened except from the smart gas meters deployment targets, which have been reduced.

Policies to increase the energy efficiency of **appliances** are characterised by the transposition of EU measures such as the Energy Labelling Directive and the Ecodesign Directive. Besides the ongoing White Certificates System, a new measure

to incentivise the purchase of highly efficient appliances has been introduced with the extension of the tax deduction scheme. Apart from ongoing and new information campaigns, little progress has been made with regard to the other elements of the policy package.

With respect to **industry, tertiary sector**, only few new policies have been introduced. The White Certificate System has been made more attractive for savings in these sectors, particularly for companies requested to have an energy manager. There currently are no economic incentives in place for industry with the tax exemption scheme having been abolished. The introduction of a new instrument similar to the tax deduction scheme and another state scheme for supporting energy audits are pending. The EED requirement for large companies to perform regular energy audits has been transposed and respective activities of SMEs will be cooperatively supported by the regions and the state through a new measure.

In the **transport sector**, all measures existing prior to 2012 are ongoing and a range of new measures related to the different elements of the policy package have been introduced according to the NEEAP. Sustainable mobility is planned to be supported via the installation of electric vehicle charging points as well as subsidies for purchases of such and other low-emission vehicles. Furthermore, a National Action Plan for Intelligent Transport Systems has been adopted. Overall, progress in the sector is rather weak.

7.16.3 Recommendations

The sectoral progress of policies is as follows:

- Regarding the overall **governance framework**, the development of the EEO scheme (e.g. its adaptation to changes in technology) to realise further energy savings in the future as well as facilitated access of ESCOs to financing for EPC should be further promoted, e.g. by implementation of demonstration projects in the public sector or implementation of loan default guarantee mechanisms.
- With the Thermal Account being the central financing instrument for energy efficiency projects in the **public sector**, the lack of involvement of banks in financing ESCO activity is a major barrier to respective improvements. Accordingly, recommendations here relate to the increased implementation of information and education measures targeted at private financial institutions staff. Also pilot projects, demonstrating the economic viability of Energy Performance Contracting might help to reduce scepticism.
- In the **residential sector**, a lack of information on financial incentives and budget constraints appear to be problematic with regard to the implementation of energy efficiency measures. Remedial measures could be better marketing of existing financial schemes in combination with a simplification of application procedures. Also to reduce reluctance among private building owners in times

of economic hardship, financial incentives might have to be increased and mechanisms to ensure quality of work established (e.g. reliable certification schemes for building professionals).

- Recommendations for amending the **appliance** policy package are to strengthen efforts in the field of education and training for retail staff and other supply chain actors.
- The policy package for the **industry and tertiary sector** is well balanced. Yet there is currently no incentive scheme for parts of the industry sector in Italy, which is not targeted by Article 8 or the energy manager obligation scheme. Setting up schemes with the same pattern as those already existing for the other sectors (such as tax exemptions, National Funding, facilitating loan conditions) could fasten the uptake of energy efficiency measures in the sector as a whole.
- In the **transport sector**, overall legislative support and incentives should be implemented to promote energy efficiency. Particularly with regard to public and freight transport, investments into more sustainable modes need to be significantly increased or incentivised.

7.17 Latvia

7.17.1 Overview of Findings

Since the second NEEAP, Latvia has made medium progress, which can be confirmed by document analysis and expert interviews. From a cross-sectoral perspective, only few additional policies have been implemented over the last three years – some former instruments were abandoned. The majority of experts (65%) either consider the ambition of implemented energy efficiency policies as “rather low” or as “ambitious in only a few sectors”. Especially with residential and non-residential buildings, the rather gloomy energy outlook (provided by experts) offers substantial space for policy adjustment and experts lament the slow pace of building refurbishment. However, energy efficiency requirements for buildings are conceived as positive. Likewise, the uptake of energy-efficient appliances should be stressed. While experts are rather concerned about the trend in the transport sector, the document screening has found an expansion of policy instruments.

7.17.2 Sectoral Progress

The number of energy efficiency policies in Latvia’s overarching energy efficiency **governance framework** has expanded to some extent. However, most measures are ongoing. Experts are concerned, among other things, about the lower interest in energy efficiency at the national level, which goes hand in hand with difficulties in obtaining financing for energy efficiency projects, e.g. in municipalities. Regarding Article 7 of the Energy Efficiency Directive (EED), Latvia has opted to combine EEOs with alternative measures.

With respect to the **public sector**, several policies are implemented, and some were newly introduced. The government newly requires public building owners to display a building's Energy Performance Certificate (EPC) prominently. Moreover, since 2014 3% of the total floor area of Central government buildings have had to be renovated annually. On the local level, several positive trends were identified such as the renovation of public buildings with smart management systems in the City Liepaja. While such efforts suggest a positive trajectory for the sector, the government stopped its support for the provision of financing to municipalities for upgrading the lighting infrastructure. Furthermore, support for research and development (R&D) is still lacking and the government does not support the Energy Service Company (ESCO) community through e.g. financial incentives and training measures, which is considered to be a major bottleneck for realising energy-efficient public buildings. With respect to the exemplary role of public buildings, experts believe that there is rather "no progress" (21%) than "good progress" (16%).

Numerous activities aim to improve the energy efficiency of **residential buildings**. Apart from the measures that were already in place in 2011, a few new instruments were introduced including, for example, the requirements for energy service providers to install electricity and heat meters accurately displaying the energy consumption of end-users as well as the National Climate Policy financing low energy buildings. Some measures were abandoned such as the Low Energy Building programme, which included support for project publicity measures. Above that, experts conceive funding to be one of the most important barriers to energy efficiency in Latvia's residential buildings. However, the government does not offer sufficient support to overcome this bottleneck. The fact that the performance labelling system for buildings, which should inform future investors on the energy consumption of a building, does not work properly deteriorates the situation.

As regards **appliances** in the residential sector, the document screening suggests that measures that were installed already in 2011 are ongoing. In particular, minimum energy performance requirements as well as the energy labelling are based on EU directives. Moreover, Latvia established an information centre as well as a website to inform end-users on the appliances' energy consumption. However, a set of instruments is missing including economic incentives to purchase best-available technologies, education and training measures for retail staff and / or supply chain actors, as well as R&D support.

With respect to **industry and tertiary sector**, most of the instruments are ongoing. The Cabinet Regulation on Industrial Energy Audits has recently been adopted and complements existing state subsidies for energy audits. Moreover, the government offers economic incentives for the uptake of building renovation, energy efficiency equipment, and building management systems. However, procedures implemented for voluntary agreements with sectoral stakeholders have not shown success yet. Above that, the programmatic or strategic direction appears to be evolving slowly. For instance, the type of companies targeted as well as their size seem to be unknown yet,

according to experts. Last but not least, especially for the services sector, the lack of a fully-fledged ESCO market appears to hinder the realisation of energy savings.

Compared to 2011, the policy landscape in the Latvian **transport sector** has expanded, even though experts perceive progress in the sector to be among the lowest in the EU. The Electromobility Development Plan drives the uptake of electric vehicles by designing a charging station network and through public education and information about Electromobility. This complements the also newly developed Environmental Investment Fund supporting electric vehicles as well as charging infrastructure. The replacement of diesel trains with electricity-based vehicles is another key measure. Cities also have been playing a key role in enhancing the transport system in Latvia. For example, Riga's public transportation system is considered to be improving and easy-to-use. Moreover, local authorities are promoting cycling.

7.17.3 Recommendations

Further improvements to the policy package could be the following:

- Within the **governance framework**, Latvia intends to reach Article 7 by combining an obligation scheme with alternative measures. However, it has not been implemented due to legal issues. These issues should be clarified. Energy service companies should be supported by policy and the Energy Efficiency National Fund should be established.
- For the **public sector,** it is key to realise the 3%-target of annually renovated floor area, which will contribute to highlighting the exemplary role of public buildings in Latvia. For the near future, it appears crucial for the government to mandate energy efficiency plans for central government buildings and establish agreements for municipalities on enhancing their energy efficiency. Moreover, training and financial incentives for the ESCO community is another important issue to be addressed in Latvia.
- With respect to the **residential building sector**, several measures exist, but the financial barrier – the key barrier to renovating residential buildings in Latvia – should be better addressed through support schemes. In addition, the EPC should be adequately implemented.
- To increase the energy efficiency of **appliances**, economic incentives for purchasing the best available technology could be an opportunity to lower sectoral energy demand. Such an instrument could aim at specific target groups (e.g. low income households). It may be complemented, among other things, by education and training measures for retail staff, so that information on the energy consumption of appliances is properly communicated to end-users.
- In the **industry and tertiary sector** voluntary agreements with stakeholders should, finally, become effective. As stated above, financial and technical support for ESCOs could be beneficial to realising energy savings in the commercial sector, as well.

- Considering the **transport sector**, the comprehensive set of policies established should be continued. Energy efficiency efforts on the local level should be rewarded or supported.

7.18 Lithuania

7.18.1 Overview of findings

The NEEAP screening and the findings from the survey conducted with Lithuanian experts show that the policy framework has been relatively stable in Lithuania since 2012, with the general existing efficiency legislation being continued and a piece of legislation adopted to set up an Energy Efficiency Obligation Scheme in 2014. Draft regulations on buildings renovation and on supporting the development of Energy Services Companies (ESCOs) are to be adopted soon to address a situation where 64% of experts see no progress on the functioning of the energy service market. On the other hand, structural funds that had been used to finance energy efficiency have expired in 2013 and it is not clear how the structural funds for the period 2014-2020 will be used to support efficiency.

Energy efficiency experts have split opinions on the level of ambition of Lithuania's policies. Half of them describe it as highly ambitious or ambitious in a range of sectors, whereas the other half describes it as low or ambitious only in a few sectors. Similarly, little less than half of them see many or at least a range of additional policies in the last 3 years, the other half seeing only a few additional policies. The same applies to the energy savings target of the Energy Efficiency Directive (EED), which 45% of experts think Lithuania will reach, against 45% who think it won't achieve it.

7.18.2 Sectoral Progress

The overarching energy efficiency **governance framework** is provided by a 2020 efficiency target described by experts as ambitious and a National Energy Independency Strategy setting goals in the energy sector up to 2050. Lithuania has set up an Energy Efficiency Obligation Scheme in 2014, which should achieve about 80% of Lithuania's target according to its NEEAP. Obligated companies are gas and electricity utilities and district heating companies. Experts nonetheless point out that transposition and implementation of EU Directives related to energy efficiency is slow.

The **public sector** has a specific efficiency target and many programmes for the renovation of public buildings. Programmes for energy management and energy audits in public buildings and exchange of best practices amongst public authorities have been continued since 2012. There are also energy efficiency requirements in place for public procurement and experts consider that the renovation rate is approaching 3%. However, several targeted programmes have been abandoned (notably, the Ignalina Programme for reducing energy consumption in selected municipalities) and the use of

structural funds for 2014-2020 is not yet determined. In addition, there is still no overall strategy for the public sector.

The **buildings** stock represents a major challenge as it makes up a large part of energy consumption (37%) in Lithuania. Several programmes have come to an end such as programmes for municipal problem areas. However, other programmes have been continued that include subsidies for renovation of housing and multi-apartment buildings. Furthermore, compliance checks of heating and cooling systems and energy audits have become mandatory since 2013. Lithuania has set up a national database for Energy Performance Certificates (EPC) of buildings and offers access to basic EPC data, such as energy class or energy performance, for any building in the database searchable by its address. Several informational initiatives (information campaigns, installation of smart meters, education for audit specialists) are still ongoing. A programme to support energy audits has been established. However, there is still a lack of well-qualified professionals for energy audits and certification. As a result, around half of the experts think Lithuania is lagging behind in meeting the Nearly Zero Energy Building (nZEB) obligation.

The policy package for **appliances** is essentially based on the EU Ecodesign and EU Energy Labelling Directives, and is complemented by information, educational and training activities. However, there are no economic incentives to purchase best available technologies, and no training for retail staff and / or supply chain actors.

Policies relating to support energy efficiency in the **industry** have remained largely unchanged since 2011. They include voluntary agreements with energy companies to achieve 10% savings in 2020. Funding is available for energy audits, as well as preferential loans and subsidies for investment in efficiency. Schemes for qualification and certification related to energy audits are also in place.

Policies in the **transport** sector are also largely unchanged and mainly based on planning instruments, investments in road and public transport and information, education and advice. In addition, a new programme to promote fuel-efficient transport has been started.

7.18.3 Recommendations

Further improvements to the policy package could be the following:

- With respect to the energy efficiency **governance framework**, the Energy Efficiency Obligation scheme offers a promising perspective. Focus should be on quick and effective implementation and widening of the scheme.
- Specifically in the **residential buildings sector**, better information is needed for all stakeholders. Subsidies for renovation could be increased through targeted financing schemes, along with an improved monitoring of renovation results.

- In the **buildings** and in the **industry** sector, training policies for energy management professionals and auditors could be reinforced so as to improve skills and increase the quality of implemented energy efficiency activities.
- It is recommended to ensure that Structural Funds are used to support renovation in **public buildings** and **industry** energy efficiency, through preferential loans for instance, in cases where existing programmes are not sufficient to unlock investment, such as for investments with long payback times. The design of the energy efficiency obligation scheme should facilitate the financing of energy efficiency in industry.
- The **transport** policy could shift focus from infrastructure into encouraging intermodal transport and fuel efficiency through regulatory instruments and economic incentives. Financial measures to support fuel-efficient vehicles should be envisaged whether through fiscal measures (vehicle tax) or through dedicated funding incentives.

7.19 Luxembourg

7.19.1 Overview of findings

Based on the screening of the NEEAP and the findings from the survey conducted with Luxemburgish experts, Luxembourg has been making relatively good progress on energy efficiency. Luxembourg plans to overachieve its energy efficiency target by 2020. A number of new policies have strengthened the energy efficiency policy framework at the national level in Luxembourg, with several significant initiatives including a climate pact to engage municipalities, model energy savings contracts, an energy savings obligation scheme and incentives for investments in energy efficiency, especially in the buildings sector.

Experts in Luxembourg rate the level of ambition as relatively high, with 57% of them considering it ambitious at least in a range of sectors. However, experts see low progress in energy efficiency over the last three years: over three quarters of them see no or very few additional policies. Accordingly, they estimate a lower rate of progress for Luxembourg compared to three years ago. Consequently, around 60% of experts think that Luxembourg is not likely to achieve the target set in the Energy Efficiency Directive (EED), although just as many of them are confident the nearly zero-energy building (nZEB) obligation will be achieved.

7.19.2 Sectoral Progress

With respect to the energy efficiency **governance framework**, Luxembourg has introduced an Energy Efficiency Obligation (EEO) scheme voted into law in 2015. The energy savings obligation rests on electricity and gas suppliers, which are free to record energy savings in various sectors. The scheme is intended to make Luxembourg achieve the EED Article 7 target. However, energy taxation remains at EU

minimum levels and therefore weakens the economic incentive to invest in energy efficiency.

The **public sector** is acting as a role model. Most measures of the previous NEEAP are being continued and additional measures are being implemented. The Climate Pact provides technical support to municipalities for the introduction of energy management systems, effectively linking requirements and support. Financial support is achieved through the involvement of the Environmental Protection Fund. A programme is in place to achieve the 3% renovation target, however it lacks a legally defined performance target for building renovation, as it only covers single measures and is not applicable at the building or system level. Its scope is limited to central government buildings (i.e. not applicable to schools and municipalities).

The policy package in place for the **buildings sector** has been largely maintained since the second NEEAP and is rather comprehensive. Minimum Energy Performance Standards are being continuously tightened and the nZEB target has been set by law for 2019. A building renovation strategy and a national plan for increasing the number of nZEB are being developed. Public funding (Primehouse Program) is available for insulation of public and private buildings. The large availability of training and education programmes for professionals of the buildings sector and numerous information tools towards consumers ensure high level awareness and good quality of efficiency improvements in residential buildings. Nevertheless, additional measures to subsidise building renovation investments are being planned, as the renovation rate has remained low and experts estimate that higher renovation rates can only be achieved if specific measures are implemented for rental and multi-owner housing.

The policy package for **appliances** is mainly based on the EU Ecodesign and EU Energy Labelling Directives and is complemented by R&D support for eco-technology. However, there are no economic incentives to purchase best-available technologies, and no training activities for retail staff and / or supply chain stakeholders.

Regarding the **industry and tertiary sector**, Luxembourg's approach continues with voluntary agreements to improve energy efficiency in exchange for proportional exemption from electricity and gas taxes remaining valid for the period 2011-2016. However, and given the low tax rate, this policy is considered rather ineffective by a majority of experts, 55% of whom also report no progress in this area. The threshold of energy consumption (currently 130GWh per year) for mandatory energy audits may be lowered. Financial incentives for SMEs are also deemed inefficient to achieve progress.

Fiscal measures in the **transport sector** have been limited to the continuation of the CO_2 vehicle tax and to a slight increase in fuel tax, which remains lower than in neighbouring countries. Luxembourg has adopted a strategy for sustainable mobility in 2012, which promotes the development of internal and cross-border public transport and has led to new public transport opportunities. Luxembourg also has set a target of 10% of total vehicle fleet to be electric by 2020 and has started planning for the

necessary recharging infrastructure. However, 64% of experts fail to see progress on transport.

7.19.3 Recommendations

Further improvements to the policy package could be the following:

- With respect to the energy efficiency **governance framework**, the Energy Efficiency Obligation scheme offers a promising perspective. Focus should be on quick and effective implementation as well as on the widening of the scheme.
- With respect to the **public sector**, a more comprehensive strategy should be implemented in order to reach the 3% target with deep renovation.
- The existing stringent standards for new **buildings** and the good level of information of the wider public about energy efficiency in buildings form a good basis for ambitious action on buildings renovation. Luxembourg should ensure that measures targeted at rental and multi-owner housing further encourage very energy-efficient buildings retrofit.
- **Industry** energy efficiency policy should go beyond voluntary agreements or ensure effective compliance so as to ensure that industrial companies take ambitious action on energy efficiency. For this purpose, further financial incentives might be needed to encourage energy management and could be coupled with technical support in identifying energy efficiency opportunities. Investment could be stimulated either by the government or through the Energy Efficiency Obligation scheme. In addition, the energy audit obligation should be strictly implemented.
- Regarding the **transport sector**, continuation of the development of public transport is recommended. The fuel tax should also be increased to reduce energy consumption of individual road transport.

7.20 Malta

7.20.1 Overview of findings

Based on the screening of the NEEAP and the opinion of Maltese experts, Malta has made very little progress since its last NEEAP. 70% of experts consider that energy efficiency policy in Malta is ambitious in a few sectors only or has a generally low level of ambition. They reach almost unanimity (93%) in considering that there has been no or only a few additional policies since the second NEEAP. Amongst those experts that are aware of the Energy Efficiency Directive (EED) savings target, more than 80% think Malta will not reach it.

The main elements of Malta's policy framework for energy efficiency have remained unchanged, such as the national energy efficiency fund, the national energy agency, and the research strategy. However, experts point out to clear issues in the policy framework, such as the lack of any mandatory target in all sectors, or low enforcement

and monitoring of enacted policies. Electricity tariffs for households and commercial consumers have been reduced by 25% by the government in 2013 and 2014, respectively. As a consequence, the overall energy efficiency policy still has great potential for further improvement, although lower electricity prices mean that the drive for energy efficiency could be jeopardised.

7.20.2 Sectoral Progress

With regard to the energy efficiency **governance framework,** the NEEAP provides for an "energy efficiency obligation scheme" that would apply to the only Distribution System Operator (DSO) in Malta, Enermalta. However according to Malta's NEEAP, this scheme essentially consists in rolling out smart meter installation and ensuring the proper use of these meters, as well as "mobiliz[ing] in order to offer (i.e. on a voluntary basis on the part of the consumers) energy services". Malta has raised its energy efficiency target for 2020 from 22% to 27% of primary energy consumption but does not have a strategic plan to implement it in a cross-sectoral manner.

The policy framework in the **public sector** has largely remained unchanged since the second NEEAP, and includes a target for the energy performance of public buildings, incentives for schools, local councils, and social housing. In addition to already existing measures, a Green Public Procurement plan is being implemented and is described in the good practices section. The network of public officials to promote energy efficiency has been expanded. Experts deplore that very little information is available on the renovation of public buildings, and are rather doubtful of Malta's capacity to reach the 3% renovation rate for public buildings. Energy audits of public building stock have been undertaken and are meant to result in an Energy Efficiency strategy for public buildings. However, so far, there is still no strategy or targets for the public sector.

In the **buildings sector,** the third NEEAP's analysis shows real efforts to advance energy efficiency. Energy performance certificates have been introduced, several energy efficiency financing schemes are in place, energy audits are to be completed for all households for free, and a centralised system is to be set up to record energy audit data. Educational campaigns and training and advisory programmes have been implemented. However, a subsidies programme targeted at low income households has been terminated and Maltese experts consider energy efficiency requirements for new and renovated buildings as not effective at all, pointing at issues in enforcement. They also mention a lack of relevant skills in the building industry and fail to see any improvement in the functioning of the energy services market. Enforcement of the energy performance regulation of buildings is poor. As a consequence, 80% of experts believe that Malta is lagging much behind in meeting its nearly zero-energy buildings (nZEB) obligation by 2020.

The policy framework regarding **appliances** is essentially based on the EU Ecodesign and EU Energy Labelling Directives. A promotional campaign was carried out in 2013

but has not been prolonged. Roll out of smart meters has been achieved to a large extent, with 84% of meters having been changed.

The policy towards the **industry and tertiary sector** is mainly based on agreements with specific companies (notably the water services corporation and the electricity supplier). Nonetheless, there are no enforcement mechanism for these agreements, and experts doubt their effectiveness. Energy audits are available for free upon request and will be mandatory for large companies, as required by the EED. However several programmes for funding to energy efficiency investments have been terminated, such as the Energy Grant Scheme. Within the tourism sector, the government promotes information and exchange of best practices.

The NEEAP highlights a number of measures in the **transport sector**, including the promotion of public transport and of cycling, notably through dedicated lanes, and a vehicle taxation based on emissions. Electric vehicles benefit from a 5,000 euros grant. Nonetheless, Maltese experts consider that Malta's progress in energy efficiency in transport is among the lowest in comparison to other EU countries.

7.20.3 Recommendations

Further improvements to the policy package could be the following:

- Malta has increased its energy efficiency target, but its **governance framework** requires an overall strategy that would ensure that adopted measures are effectively implemented and their effect monitored. In order to do so, it should increase the prerogatives of its energy agency and strengthen the measures to be implemented under the Energy Efficiency Obligation Scheme to support investment in energy efficiency in buildings and industry.
- In addition, existing measures in the **public sector** should be leveraged in order to start a market for energy services as there are no ESCOs in Malta at the moment. Energy performance contracting in public buildings could for instance be used in this view.
- There should be a focus on improving the enforcement of energy efficiency measures in the **buildings sector** in order for the existing policy framework to be effective. Training opportunities should be increased in order to address the lack of relevant skills in the buildings sector.
- Energy management should be promoted and financing opportunities for investing in energy management and energy efficiency measures should be widened in **the industry** and in the **services sector** (especially the tourism sector). EU Structural funds could be used as a source of financing.
- In the **transport sector**, the reliability of public transport should be increased, and intermodal transport should be developed.

7.21 The Netherlands

7.21.1 Overview of findings

The screening of the NEEAP and the findings from the survey conducted with Dutch experts show that the Netherlands have made medium-to-low progress since the second NEEAP. Experts see a relatively low overall ambition of energy efficiency policies - 75% consider it rather low or ambitious in only a few sectors. Similarly, around three quarters saw very little progress in energy efficiency policies or few additional policies in the last three years. The Energie Akkoord signed in September 2013 provides the framework and sets the target for the Dutch energy efficiency policy, which is also transposed in sectoral targets (for Energy, Built Environment, Industry and Small and Medium Enterprises (SMEs), Transport and Agriculture). It ensures broad awareness and ownership of the agreed measures amongst all stakeholders. However, its voluntary nature may undermine its efficiency and implementation has been slow.

According to interviews of experts, current planned measures are insufficient to achieve the objectives from the Energy Efficiency Directive (EED). 70% of experts expect that the Netherlands will not reach the EED Art. 7 savings target. However, experts highlight that with additional and corrective measures, the Netherlands could get back on track.

7.21.2 Sectoral Progress

For the overarching energy efficiency **governance framework,** the Netherlands have opted for alternative measures, agreed upon in its Energie Akkoord, rather than for an Energy Efficiency Obligation scheme. However, implementation so far has shown to be slow and experts estimate that existing measures within the framework of the agreement are not sufficient to reach the Dutch energy efficiency target. The Dutch Energy Agency's role in supporting implementation has been reduced due to decreasing staff and funding.

The **public sector** has strengthened its action on efficiency, with the adoption of Roadmap to a climate-neutral municipal and provincial organisation, standards for public building energy labels and a target for sustainable purchasing for municipalities. The central government made a pledge to go for 100% green procurement, regional and local authorities are aiming for 50-100%. There is no national support programme for renovation of public buildings, and no specific renovation target, but the government is nonetheless taking action to improve energy efficiency of public buildings. In addition, regional subsidy programmes are available for municipalities.

Policies in the **buildings sector** have been changed over the past three years, nonetheless experts report rather slow progress. They point to delay in implementation of the Energy Performance of Buildings Directive (EPBD), notably the fact that Energy

Performance Certificates (EPCs), though available for all buildings, are often of poor quality. Energy certification of buildings has the lowest ranking in terms of efficiency of all Member States, despite the link between maximum rent and energy performance of the building. Regarding financing, the 'More with Less' grant scheme was abandoned and VAT rebates for buildings renovation were weakened, while new funds, including subsidies for landlords in the social rental sector, were established. The refurbishment initiative 'Energiesprong' has been launched, and aims at large-scale deep refurbishment through a deal between housing associations and construction companies to refurbish 111,000 houses. Half of experts believe that the Netherlands are on track towards the "nearly Zero Energy Buildings (nZEB)" obligation.

The policy package for **appliances** is essentially based on the EU Ecodesign and EU Energy Labelling Directives. The budget to inform about appliances efficiency was significantly reduced and no further policies have been implemented. There are no economic incentives to purchase best-available technologies, and no training for retail staff and supply chain actors.

The policy for the **industry and tertiary sectors** has remained largely unchanged, building on Long-Term Agreements, subsidies, and tax reductions. Activities in the industry and service sectors are included in the Energie Akkoord. Energy audits are promoted and companies must draw up an energy efficiency plan every four years. However, experts deem the progress slow, and as a matter of fact, corrective actions have been taken: companies which are not implementing the actions they voluntarily committed to will lose tax advantages.

In the **transport sector**, taxation of company cars was increased depending on emissions and voluntary agreements have been launched to support companies reducing the emissions from employee commuting. The fuel tax is continuously increased. There are also ambitious plans for e-mobility in the pilot phase. These positive developments are counterbalanced by the discontinuation of a tax exemption that was benefitting very efficient cars from 2011 to 2013, and the increase of the speed limit on highways, giving a mixed picture for efficiency in the transport sector.

7.21.3 Recommendations

Further improvements to the policy package could be the following:

- With respect to the overarching **governance framework**, it is recommended to strengthen the monitoring and compliance system of the Energie Akkoord and of voluntary agreements so as to ensure full and speedy implementation, especially in the industry sector, and to trigger large scale action of private companies. Corrective actions must be adopted where the agreement does not deliver. Also, access to information on availability and use of funds should be facilitated.

- The leading role of the **public sector** can be reinforced with more involvement of the national level in efficiency programmes and with full implementation of the provisions related to the public sector in the Energie Akkoord.
- In the **building sector**, the Energiesprong programme should be maintained and its expansion sustained in order for mass market penetration to be ensured. In parallel, the accuracy of energy performance certificates should be improved.
- Complementary measures on **appliances** could be adopted to provide financial incentives for energy-efficient appliances to consumers.
- In the **industry and tertiary** sector, stronger financial incentives should be used to spur companies' investments in efficiency.
- The **transport** sector is still dominated by individual cars: there is room to further encourage modal shift to public transport.

7.22 Poland

7.22.1 Overview of Findings

Compared to the second NEEAP, the Polish government introduced a small set of new policies. This is confirmed by both, document analysis as well as expert interviews. Polish experts generally lament that in all sectors there is a tendency that policies are insufficiently designed and implemented.

Moreover, energy efficiency policies are conceived as low in ambition. One reason can be the availability of coal resources in Poland, reducing the political and individual incentives for energy savings in most sectors and also the interest of utilities for energy efficiency.

7.22.2 Sectoral Progress

With regard to the overarching energy efficiency **governance framework**, few changes were identified. Hence, the government still relies on a well-designed strategy and the National Fund for Environmental Protection and Water Management is in place. The latter contributes to overall energy planning in Poland and has been successfully financing low carbon economy plans of around 800 Polish municipalities. In particular, this has facilitated the local involvement regarding energy efficiency. This can be seen as an important development given the critique of interviewed experts that neither staff nor budget is made available sufficiently at the national level to plan and implement policy instruments adequately. Moreover, the Energy Efficiency Obligation (EEO) Scheme became operational; however, 32% of Polish experts think that the target of the EEO is unlikely to be reached. Moreover, experts also believe that neither staff nor budget is adequately available to plan policies properly.

The document screening shows that there is still a lack of a clear strategy in the **public sector**. However, the government started to financially support energy efficiency efforts of local government entities with respect to street lighting. Such findings are backed by

experts, which point to available funding and financing opportunities in the sector. But opportunities are hindered by insufficient capacities and skills of municipal staff to realise energy efficiency projects as well as by a relatively high level of debt.

Several new measures have been implemented in the **residential buildings sector** since the second NEEAP. For instance, between 2012 and 2014, information campaigns were carried out to promote the rational use of energy. Moreover, a subsidy scheme for the construction or purchase of an energy-efficient house or apartment is available. Based on the expert survey, financial mechanisms appear to be insufficient to motivate end-users to undertake action, which is largely because of low coal prices as well as due to low household incomes.

Regarding energy-efficient **appliances**, the NEEAP remains vague. The Ecodesign and Energy Labelling Directive are effective in Poland, but, for instance, it is not clear, whether training programmes for staff of retail companies have become effective in order to promote the purchase of energy-efficient appliances.

The policy framework for the **industrial and service sectors** has been expanded. For example, the EEO is implemented, periodical energy audits are now mandatory for non-SMEs and a co-financing scheme to promote energy efficiency measures is available for small- and medium sized enterprises. However, support for research and development (R&D) is still missing.

In Poland's **transport sector,** the focus is on road transport. Speed limits are in place, even though these are not very strict and the Green Investment Scheme (GAZELA) supports the purchase of, for example, new hybrid buses. Experts, however, believe that investments in the public transportation system are inadequate.

7.22.3 Recommendations

Further improvements to the policy package could be the following:

- Regarding the **governance framework**, the majority of Polish energy efficiency experts raised the concern that the EEO is unlikely to be achieved. Hence, this calls for a strengthening of EEO implementation in order to bring obligated parties to realise energy savings.
- For the **public sector**, the government should implement a comprehensive strategy on how energy savings are realised sustainably in public buildings. Such a strategy should include, among other things, approaches to enhance the skills and capacities of municipal staff with respect to realising energy efficiency projects and, apart from that, the strategy should address the debt issue that represents a huge burden to municipalities and their energy efficiency efforts.
- With respect to the **residential building sector**, financial instruments should be adjusted so that they attract end-users to purchase or construct energy-efficient

buildings. Especially low-income groups should be targeted through higher financing or funding support.

- In the **industry sector**, energy efficiency policies appear to be watered down by putting the focus of instruments rather on job creation than on energy savings. This should be altered. Generally, a strengthening of the EEO could urge or incentivise obligated parties to undertake action with respect to energy efficiency.
- In the **transport sector**, the government should also take into account other modes of transportation (e.g. rail). Some regulatory measures, e.g. speed limits, should become stricter in order to realise higher energy savings. Moreover, the government should more adequately finance the Polish public transportation system.

7.23 Portugal

7.23.1 Overview of Findings

Both the NEEAP screening and the expert interviews paint a relatively pessimistic picture regarding progress in Portugal's energy efficiency policies. The majority of experts believes that the ambition of Portuguese energy efficiency policies is "rather low" (26%) or "ambitious in a few sectors" (34%). Moreover, two thirds of them think that the "nearly Zero Energy Buildings" (nZEB) target will hardly be achieved.

7.23.2 Sectoral Progress

As regards the overarching energy efficiency **governance framework**, the document screening found that the government has made some gradual strides since 2011. Its goal to reduce energy consumption by 25% in 2020 is (still) the key focal point for the near future. The public contract regime organising energy saving contracts between public administration and energy service companies (ESCOs) is continued. To safeguard the quality of the services provided as a result of the aforementioned public contract regime, the government launched a system of registration and qualification in 2012, which sets the requisites for ESCOs. Experts believe that the government established the right conditions to establish an ESCO market. Portugal's VAT on sold energy increased from 6% to 23%, which should facilitate the more rational use of energy, which can be regarded as a force driving energy efficiency with large(r) end-users (e.g. municipalities, industrial enterprises). Admittedly, for low-income and vulnerable households, this policy is quite problematic. Energy efficiency funds are still in place to provide financing for energy efficiency projects. Regarding the Article 7 target of the Energy Efficiency Directive (EED), Portugal has decided to use the alternative approach. However, an obligation for energy-intensive industries to reduce the energy consumption (depending on their energy consumption per year) is in place.

In the **public sector**, the Portuguese government has newly committed to the goal to increase energy efficiency by 30% in 2020. Public service buildings should achieve an energy class of B, at least. Moreover, regulations for public lighting and new energy efficiency and environmental criteria for transport should contribute to saving energy in the public sector. As mentioned earlier, ESCO projects are facilitated through the public contract regime. According to experts, the implementation of ESCO projects progressed. Despite these positive remarks, experts believe that financing remains one of the most challenging issues for the public sector. Considering the exemplary role of public buildings, interviewees are very pessimistic – 55% think that there has not been any progress since 2011.

Within **residential buildings**, hardly any progress has been identified through the NEEAP screening. The mandatory energy certification system for buildings (SCE) is to be regarded as a positive development – buildings that are rented or sold are obliged to have an energy certificate. There are also new requirements for the selection process of experts for building energy certification and for the installation of equipment under the SCE programme. Several information tools for investors and users are ongoing such as Operation E or Energy At Home. On the downside, it must be noted that the tax deduction for efficient building equipment was abandoned. Apart from that, the NEEAP assessment also suggests that neither financing instruments, demonstration projects nor education and training measures for building professionals appear to play a role in Portugal's energy efficiency strategy for residential buildings. Experts note that there is a funding mechanism continuing, which e.g. supports the replacement of windows; however, the fund is very small.

Based on the document screening, the government seems to move rather backwards in the **appliances** sector. Information campaigns with the goal to detract people from acquiring new inefficient appliances were abandoned. While some measures are ongoing, education and training policies for retail staff is a field that remains untargeted by the government.

Regarding the **industrial, service and agricultural sector**, policies are rather stable. The management system facilitating energy efficiency in different operations / industrial sectors is ongoing, as are binding energy audits for energy-intensive facilities. Energy efficiency in the agricultural sectors newly aims at upgrading agricultural and forestry equipment, improving pumping stations and irrigation systems and carrying out surveys and audits of the sector's activities. The programme also includes financial incentives.

With respect to energy efficiency policies in the **transport sector**, the expert survey shows that the overall support for electric vehicles (EV) decreased. A majority of 56% of the experts think that "no progress" has been made in the previous years, even though the document screening found that the government seeks to improve the charging station network through the Electric Mobility programme. Apart from that, the government also intends to support bicycle-based transport.

7.23.3 Recommendations

Further improvements to the policy package could be the following:

- To develop a more comprehensive **overarching energy efficiency governance framework**, the policies should not be reshuffled each time when there is a change in government. An energy efficiency obligation scheme could realise significant energy savings in combination with alternative measures. Furthermore, Portugal has a good legislative framework for establishing an ESCO market but banks are not willing to invest in energy efficiency projects. Therefore, banks as a key actor in the energy service market should be addressed.
- For the **public sector** it appears crucial to become a role-model for other sectors and end-users. The government should engage in establishing further financing sources (apart from the promotion of ESCO contracting).
- As regards the **residential building sector**, financial incentives should be set up in order to support building owners. Moreover, demonstration projects may have a high informational added value towards end-users.
- With respect to **appliances**, the government should re-introduce information campaigns to inform end-users on the advantages of energy-efficient appliances. Education and training for retail staff can contribute to informing end-users about energy efficiency.
- In the **industry and tertiary sectors**, energy managers could be very valuable in order to constantly check for new energy saving opportunities. The government could provide incentives to kick-start the assignment of such managers. Moreover, funding for energy efficiency measures could also contribute towards realising energy savings in the sector, e.g. through structured funds or financial incentives. The existing approach to oblige energy-intensive companies to reduce their energy consumption should be further developed as an energy efficiency obligation scheme according to Article 7, EED.
- For the **transport sector** it is essential to introduce funding schemes to offer an incentive to buy energy efficient cars.

7.24 Romania

7.24.1 Overview of findings

The screening of the NEEAP and the findings of the country survey by experts show that the policy framework has been relatively stable since 2012. Overall, most measures have been continued and a few new ones introduced, without creating significant change. This is reflected in the expert survey: Half of experts see progress in the last three years, while half do not. They nonetheless agree in finding the policy framework insufficient: three quarters of interviewed experts perceive the Romanian

energy efficiency policies as low or ambitious in only a few sectors. A clear majority of experts think that Romania will not achieve the energy savings target of the Energy Efficiency Directive (EED). The main issue that experts point at is the difficulty to access financing for energy efficiency, partly due to bureaucratic obstacles.

7.24.2 Sectoral Progress

With respect to the overarching energy efficiency **governance framework**, Romania has opted in 2014 to implement alternative measures rather than an Energy Efficiency Obligation scheme. several strategic documents have been adopted in the past years according to the NEAP. Romania now has a Large Infrastructure Operational Programme for 2014-2020, a regional Operational Programme and a Strategy for mobilizing investment in the renovation of buildings. An Energy Efficiency Investment Fund manages financing from varied origin (Structural Funds, EU ETS revenues) and supports investment. Experts however draw a relatively negative picture: The National Authority for Regulation in the Energy Sector (ANRE) does not have full competence over energy efficiency despite the inclusion of an energy efficiency department, and public authorities lack ambition. In addition, taxation rates for energy (gas and electricity) are at or near the EU minimum.

In the **public sector**, the obligation for public administrations to have an energy efficiency improvement programme and the public lighting modernisation programme are ongoing. Two significant new measures have been introduced: a thermal insulation programme for public buildings has been launched and procurements must meet the energy efficiency standards listed in the EED. However, implementation of energy efficiency measures seems to be lagging behind. Experts point out to a lack of financing in the public sector: a dedicated financing programme ended in 2010 and has not been replaced. With respect to the renovation target, the Romanian NEEAP states that Romania has taken the necessary measures to ensure it is met (applying only to buildings larger than 500m^2), but does not provide any details. Experts report that no renovation has been undertaken yet in public buildings, neither at central nor local level, and that no programme or funding is available to support this target.

The policy package for the **buildings sector**, as described in the NEEAP, has been relatively stable since 2011, with most measures being continued. The nearly Zero Energy Buildings (nZEB) target has been set by law for 2020 and the Energy Performance Certificate (EPC) scheme has been transposed. 88% of experts think nonetheless that the nZEB target will not be reached. A thermal rehabilitation programme for residential buildings (blocks of apartments and multi-residential buildings), financed by bank loans with government guarantee is ongoing. Local authorities have the possibility to provide tax reductions to private households that have taken up loans for energy efficiency improvements. However, only a few cities have used this possibility so far and experts rate the financial incentives as ineffective. The roll out of smart meters has been written in to law and pilot projects are being

implemented. From a practical point of view, experts report that there is a lack of trained professionals, for instance to perform energy certification.

The policy package for **appliances** is essentially based on the EU Ecodesign Directive and EU Energy Labelling Directive, and is complemented by a voluntary label for office equipment (Energy Star). However, there are no economic incentives to purchase best-available technologies, and no training measures for retail staff and / or supply chain actors.

Experts assess the impact of policy measures in the **industry sector** rather positively. They report that initiatives for restructuring and modernizing the industry have resulted in improved energy efficiency. Energy efficiency investments in small and medium enterprises (SMEs) are incentivised through a dedicated programme. Companies with a large energy consumption have to conduct energy audits and have to implement energy management systems (see good practices section). There has been no progress on voluntary agreements after the completion of one pilot project. A subsidy programme for the industry, the RO 05, ended in 2014 and has not been replaced.

Energy consumption in **transport** is growing. The vehicles stock in Romania is rather old. A programme to encourage replacement of old vehicles with more efficient ones through a government subsidy has been relatively successful. Companies with large vehicle fleets must have monitoring and management systems for their fuel consumption. In addition, Romania adopted a General Master Transport Plan and a Strategy for the Development of the National Transport System. However, experts consider that they contain mainly general statements and lack detailed measures. Modernisation of rail transportation and of urban public transport is ongoing with programmes to replace older trains.

7.24.3 Recommendations

Further improvements to the policy package could be the following:

- With regard to the **governance framework**, coherence between the national, regional and local levels should be enhanced. There is also a need to create additional measures and incentives to enable local authorities and companies to access necessary sources of financing. Bureaucratic procedures should be simplified. This would spur the development of Energy Services Companies (ESCOs). If additional measures are not sufficient, the establishment of an Energy Efficiency Obligation scheme should be considered.
- In the **public sector**, staff should be better trained and informed. In order to spur renovation, dedicated funding should be made available, especially to local authorities. This funding could be made available from the EU structural funds.
- EU funds can be used to support and develop support to **buildings** renovation and improvements in the **industry**. Access to these funds should be improved,

as they have been underused in the past. Voluntary agreements could also be implemented with industry to build on audit requirements.

- In the **transport** sector, further modernisation and development of public transport infrastructure is needed. Intermodal transport should be promoted, with a focus on public transports and cycling in cities.

7.25 Slovakia

7.25.1 Overview of findings

According to the expert interviews carried out, the Slovak government has made medium progress since the second NEEAP. Moreover, the ambition of energy efficiency policies is perceived as "rather low" (24%) or as "ambitious in only a few sectors" (46%). In particular, with respect to the improvement in the actual implementation of energy efficiency in the transport sector and the exemplary role of public buildings, opinions were rather negative. With respect to the 1.5% energy savings target, only a fifth of the experts think that the goal is likely to be realised. Interviewees are more optimistic with respect to the nearly Zero Energy Building (nZEB) obligation by 2020, which is expected to be achieved by 44% of the experts. The document screening shows that the government established several policies, which can contribute to energy savings in the near future, such as contact centres for information on energy services.

7.25.2 Sectoral Progress

As regards the overarching energy efficiency **governance framework**, Slovakia has opted for alternative measures rather than an Energy Efficiency Obligation scheme. Several new measures have been implemented and some have been advanced. The government concluded voluntary agreements with energy suppliers as well as with main energy consumers; parties either commit to energy reductions or to inform on savings made in the previous year. Moreover, through financial support, municipalities are better able to design sustainable energy action plans. One of the most important framework conditions depicted in the third NEEAP are the new contact centres for information on energy services.

With respect to the **public** sector, a clear strategy for reaping the energy savings potential in public buildings is still missing. In addition, experts recommend to adjust procurement procedures in favour of energy efficiency criteria. Financial support is offered to different types of public buildings (e.g. healthcare facilities) through the "Energy Efficiency in Public Building" pilot project or the "EkoFond". Despite these efforts, financing remains a critical challenge to be overcome.

Numerous measures aim to improve the energy efficiency in the **residential buildings** sector. For instance, the government has tightened requirements for the energy performance of buildings. In buildings with rented parts and a total floor area exceeding

1,000 m^2, a separate measurement of energy consumption has become mandatory. The budget of the State Housing Development Fund providing soft loans for energy efficiency improvements in buildings has been significantly increased. However, experts believe that monitoring and verification of building energy certificates are very limited.

To increase the energy efficiency of **appliances**, only limited changes took place. One of the minor changes is that mandatory smart metering of electricity consumption in households must be installed by 2020. It is very noteworthy, that experts perceive energy labelling of products as a very effective (29%) or at least partly effective (47%) instrument – in this respect, it has the most positive rating compared to other instruments assessed in Slovakia. Based on the NEEAP screening, education and training for retail staff or other supply chain actors are missing.

Regarding the **industrial and service** sector, a set of measures complements previously existing policies. Voluntary agreements and smart metering, both of which were mentioned above, affect this sector particularly. The Slovak Sustainable Energy Finance Facility (SLOVSEFF), which is further described in a dedicated case study, continues to provide financing for energy efficiency enhancement in industrial production processes. Financial assistance is available for SMEs to cover costs of compulsory energy audits.

In the **transport** sector, most of the policies appear to continue including the EkoFond, a grant scheme to support the use of compressed natural gas (CNG), and the bus and passenger rail transport policy, which finances services of public interest (e.g. regional rail transport). While information and advice measures are lacking completely, it is noteworthy that the Slovak government has provided free rail transport for elderly people, students, as well as handicapped people since November 2014. Despite these positive findings from the NEEAP screening, the expert survey provides a different perspective – 44% of interviewees believe that there is “no progress” in the transport sectors, while 56% think that energy efficiency has made only “some progress.”

7.25.3 Recommendations

Further improvements to the policy package could be the following:

- Regarding the overarching energy efficiency **governance framework**, the government should foster the development of a fully functioning ESCO market. Furthermore, a national monitoring system and a methodology for calculating energy savings has to be established.
- In the **public** sector, the government should enhance its financing to refurbish (and construct) government buildings. Given that public buildings can have an exemplary role for other sectors, it appears crucial overcome the financing bottleneck. The financing support, in turn, has to be embedded in a clear overall strategy for public buildings.

- For the residential sector, a primary concern is to establish a functioning monitoring and verification system for **building** energy performance certificates.
- Regarding **appliances**, the government should set the course for realising the smart metering target by 2020. Above that, training and capacity building measures for retail staff should be realised in order to provide more comprehensive and reliable information to end-users on the energy consumption of different types of products.
- In the industry sector, focus should be on ensuring the effective implementation of voluntary agreements. In addition, dedicated funding for energy audits for all companies could help raise awareness amongst businesses.
- Despite positive findings in the **transport** sector, experts are, generally, quite pessimistic on sectoral development. The government should adjust the policy framework in order to realise energy savings in the transport sector. To this end, particularly, information and advice for the drivers (with a special focus on professional drivers) should be set up.

7.26 Slovenia

7.26.1 Overview of Findings

The screening of Slovenia's NEEAP and interviews with Slovene experts provide an overall positive picture, despite numerous outstanding challenges. According to the Slovene experts, Slovenia is among those Member States that have progressed comparatively well in energy efficiency policies since the second NEEAP. Experts see a relatively high overall ambition of energy efficiency policies – nearly 60% consider it at least ambitious in a range of sectors. Over 50% find that a range or many additional energy policies were introduced in the last three years. Nonetheless, opinions among the interviewees are divided almost evenly regarding the achievement of the savings target of the Energy Efficiency Directive (EED): 43% think that Slovenia will reach it, 40% think it won't.

Slovenia has introduced an energy efficiency obligation scheme a few years ago which is expected to undergo significant changes brought by the 2014 Energy Act. Regarding sectoral policies, experts are concerned about the market implementation of building energy performance certificates (EPCs). Also they mention the challenge of accessing financing as well as interesting owners in building renovation. Finally, energy taxation is perceived as non-effective by half of the experts.

7.26.2 Sectoral Progress

With respect to the overall energy efficiency **governance framework**, Slovenia has adopted an Energy Act in 2014 and is now in the process of adopting an Energy Concept to provide strategic orientation to its energy policy. The Energy Act established an energy efficiency obligation scheme and an Eco-Fund intended to

provide financing for energy efficiency investments. The scheme obligates energy suppliers and is linked to the Fund, which is based on an energy consumption fee on fuels, district heating and electricity. Fund beneficiaries re-pay the financing in the form of energy savings from projects carried out. The obligation scheme and the Eco-fund are planned to achieve the 1.5% target set by the EED. Regarding the institutional framework, experts point to the dispersion of competences across ministries and agencies, which hinders effective steering of policy implementation.

For the **public sector**, experts report on a range of well-implemented public buildings policies with high energy efficiency standards and renewable energy supply, both in new construction and renovation. However, they consider that more could be done in procurement, although the NEEAP shows that guidelines on energy-efficient public procurement have been updated. The NEEAP also mentions the obligation for public sector entities to establish an energy management system. Experts note that many efficiency projects have been undertaken in the public sector, for instance in schools, hospitals and elderly homes.

In the residential **buildings sector**, experts see a good development in the standards for new buildings. They also mention the introduction of heat metering in apartment buildings. Energy efficiency requirements for new and renovated buildings and energy labelling of products are rated at least partly effective by 97% and 91% of experts respectively. However, experts note that the energy performance certificate (EPC) system is too complicated, with lengthy bureaucratic processes and a lack of certified experts. In addition, 60% of experts think Slovenia is lagging behind in meeting its obligation under the Energy Performance of Buildings Directive (EPBD) that all new buildings be nearly zero-energy buildings (nZEB) by 2020. A loan guarantee scheme offers several financing possibilities, training measures have been continued and aim at ensuring a high quality level of energy audits and energy performance certification. Most investments supported by the Eco-Fund are in the buildings sector (insulation measures, efficient boilers, etc.).

The policy package for **appliances** is based to a large extent on the Ecodesign and Energy Labelling Directives, no new measures have been implemented since the last report. Economic incentives to purchase energy efficient household appliances have remained in place, but are not complemented by information, educational and training activities. There are no training measures for retail staff or other supply chain actors.

With regard to the **industry, tertiary sector, and agriculture,** the Energy Act has introduced mandatory audits at large enterprises, in compliance with EED provisions. Financial incentives for the introduction of energy management systems and for implementing energy efficiency measures in SMEs are also in place. However, experts note that financial incentives for investment in energy efficiency are lacking, especially for larger investments and larger companies. To remedy this situation, voluntary agreements with the industry are in preparation whereby companies investing in

energy efficiency would be exempted from a number of energy levies (RES levy, CHP levy, etc.).

On the basis of the information provided in the NEEAP, the policy package for the **transport sector** seems to be well balanced. It contains a Transport Development Strategy, measures for freight, cycling and alternative fuels, with financial incentives for more efficient vehicles. However, the experts' opinion is different. They see a significant need for improvements in the public transport system. Energy efficiency in transport has seen no progress in the last years for 43% of experts.

7.26.3 Recommendations

Further improvements to the policy package could be the following:

- With respect to the overall **governance framework**, the establishment of one single agency that would be responsible for energy efficiency would improve and streamline implementation of energy efficiency policies. Implementation of the energy efficiency obligation scheme and the Eco-Fund should be monitored and adjusted if needed.
- In the **public sector**, public procurement may be used to leverage the market for energy efficiency services and products so as to also develop the ESCO market.
- In the **buildings sector**, a simplification of certification procedures for EPC is needed. EPC results should be used to target financial and other support measures.
- It is recommended to strengthen voluntary agreements (monitoring and compliance) and financial incentives for investments in energy efficiency so as to ensure full implementation, especially in the **industry sector**, and to trigger large scale action of private companies.
- An ambitious plan is required to support modal shift from individual cars towards public transportation. For this to be achieved, the public **transport** system must be upgraded and developed.

7.27 Spain

7.27.1 Overview of Findings

Based on the document screening and survey results, the Spanish energy efficiency policy can be considered average, with both good and unsatisfactory elements. However, experts consider the overall ambition of energy efficiency policies as very low. 88% of the experts see very little progress in energy efficiency policies and only a few additional implemented policies in the last three years. Experts rated the overall ambition but also the progress much lower than in 2012. The reason is the strong impact of the economic and financial crises, which has led to a significant decrease of public budget. Approximately 50% of the experts believe that the exemplary role of

public buildings and the public purchasing efforts made no progress at all. In the energy service market, only 41% think that Spain made some progress, 54% believe, that Spain made no progress in this field. Better results were achieved in the transport and industry sector. More than 60% of the experts mentioned that these sectors made some progress.

The document screening has also come to the conclusion that the policy package is not very balanced. Most of the measures are ongoing and several policies are under implementation but not necessarily fully in operation yet. But there are also some positive developments in Spain: The National Fund for Energy Efficiency was set up in 2014 and is fed by contributions of obligated parties. The parties have already made their respective contributions to the fund for 2014. As a result, 3 new programmes, targeting small and medium enterprises (SMEs) and large companies, transportation and street lighting, have been approved in 2015. Other positive developments were made on the Energy Service Company (ESCO) market, which now allows long-term contracts, particularly with public institutions and with a subsidy programme for building renovation of new buildings. The transport sector is supported by the successful Efficient Vehicle Incentive Programmes (PIVE) programme.

The Basque region has its own agenda and competences for energy issues. The region is not included in this analysis.

7.27.2 Sectoral Progress

The overarching energy efficiency **governance framework** has improved in the last three years. A target for 2020 was defined including targets for different sectors. Furthermore, a building renovation strategy was published. To reach the targets and to finance the energy efficiency measures, a national fund was established in 2014. One third of the experts believe that the fund is partly or very effective. In addition, the Investment Fund for Energy Diversification and Saving (FIDAE) was designed to finance urban projects (budget: EUR 123 million). However, the energy agency IDAE has had a reduced budget over the last years. An energy efficiency obligation scheme will be developed. Until now the obligation scheme is realised by energy companies which contribute to the fund. Policies to strengthen the energy service market have also been improved, however, the primary target sector are public administrations.

In the **public** sector, two plans were finalised and some other policies are ongoing. An energy and asset management platform was set up. The public procurement efforts are all ongoing. A programme to stimulate street lighting was developed. The equipment should comply with the Energy Star criteria. To increase the energy efficiency of public buildings, a guideline was published. Energy performance certificates are required for public buildings larger than 500 m^2.

Policies to promote energy efficient **buildings** are based on the implementation of EU measures like the Energy Performance of Building Directive (EPBD) and particularly building codes and Energy Performance Certificates (EPCs), and some additional

national programmes. Two financial incentive programmes were finalised, but an aid programme for the energy renovation of existing buildings and a state plan for the promotion of rental housing, building restoration and urban regeneration and renovation were introduced. However, most of the national experts (80%) believe that Spain is not on track for all new buildings to be nearly zero-energy buildings by 2020. A training plan was newly developed to inform about the EPC and to educate building professionals. Several information tools exist, which are all ongoing.

The **appliance** sector is characterized by the transposition of EU measures like the Labelling Directive and the Ecodesign Directive. In addition, a replacement programme for inefficient lamps is ongoing but comprehensive economic incentives are missing. There are several information campaigns and education programmes, which are also all ongoing.

All measures in the **industry and tertiary** sector are ongoing and only a few were improved/ newly developed. An energy management system was established and further developed in 2014. A grant scheme for improvements in equipment and processes is still in place. A new programme for the hotel sector and a programme for the benefit of companies were developed. The sectoral progress is rated very low in the industry sector by experts.

In the **transport** sector, all planning instruments are ongoing like the sustainable mobility plans and the sustainable mobility strategy. Economic incentives include the ongoing registration tax based on CO_2 emissions and some newly developed programmes to switch to more efficient vehicles like the promotion of electric vehicles and a programme for alternative fuel refilling. The PIVE programme, an efficient vehicle incentive programme, is very successful and has been renewed recently. According to the experts, the transport sector is the best-covered sector by energy efficiency programmes in Spain.

7.27.3 Recommendations

Further improvements to the policy package could be the following:

- Within the **governance framework**, an energy efficiency obligation scheme was implemented and made mandatory for energy companies to contribute to the National Energy Efficiency Fund. However, an actual completion of the white certificate scheme with energy efficiency activities by the energy companies is outstanding. Concerning the energy service market, more support and efforts from the government is needed to develop the ESCO market. For example, more information for potential ESCO end-users should be developed.
- The main barrier in the **public sector** are reduced investments. Due to the economic crises, many municipalities find it difficult to invest in energy efficiency. There is a need for innovative financing mechanisms to make investments happen.

- In the residential sector, long pay-back times for **building** renovation (due to climate conditions) are the main challenge. The energy savings are often too small to compensate large renovations. An increase in funding (e.g. for financial incentives), energy audits, and awareness raising activities should be realised. A comprehensive information campaign for building owners would be welcome.
- The policy package for **appliances** could become more balanced by economic incentives for very energy-efficient appliances. A voluntary labelling scheme in addition to more information and training of retail staff should be introduced.
- The **industry and tertiary sectors** need more innovative technical and financial support. The sector is unevenly supported; it varies from year to year. Some measures (e.g. energy audits) needs more expertise to be implemented. An energy efficiency obligation scheme for large consumers should be established to address the industry sector to invest in energy efficiency projects. Another option to support the industry sector is the national fund. The new fund should be used to support the investments.
- The **transport sector** is already were successful due to the PIVE programme (see good practice example). However, the potentials of the public transport should be analysed. Based on this analysis, policies and measures should be implemented to make the public transport more efficient.

7.28 Sweden

7.28.1 Overview of findings

Based on the NEEAP screening and the opinion of Swedish experts, energy efficiency policies in Sweden are comparatively ambitious in a range of sectors. However, 70% of surveyed experts see very little progress or few additional policies in the last years. This indicates that energy efficiency policy is not sufficiently matching the high ambitions.

Sweden has set an overall energy efficiency target for 2020 and a specific target for the building sector in 2050. A large part of Sweden's energy efficiency policy is based on information and taxation to reach the overall energy efficiency target. The government estimates that Sweden will overachieve the energy efficiency target under Article 7 of the Energy Efficiency Directive (EED) by 47%.

Sweden has a central Energy Agency as well as 14 regional Energy Offices that are distributed across the country. In 2013, an Energy Efficiency Council has been established to reinforce collaboration and coordination among the different authorities.

The municipal and city level has been very active in pushing for energy efficiency through "smart" sustainable developments such as Malmö, Växjö, the Royal Seaport Development in Stockholm, and in Lund. Municipalities are seeking to promote energy performance requirements beyond national ones to drive deployment of proven energy efficient technologies. Municipalities have also developed stricter building codes than

national building codes. Yet, they are not allowed to enforce them. Given Swedens relatively weak national level of building codes, experts rank the implementation of the “nearly zero energy buildings (nZEB)” requirements as critical.

Public procurement remains a powerful tool for energy efficiency market development. While the Swedish government supports technology innovation programmes (often as technical, or innovation procurement), experts remark that these programmes tend to be isolated and could be better integrated into public procurement processes.

7.28.2 Sectoral Progress

Regarding its overarching energy efficiency **governance framework,** Sweden has opted for alternative measures. They are implemented by a large number of regional Energy Offices in the municipalities and a central Energy Agency. The Energy Agency is currently promoting the creation of a trade organisation for energy services and acts as point of contact. Experts nonetheless report that responsibilities are fragmented on a multitude of administrations serving under different departments, which weakens the governance structure. Public procurement and support for buyer’s groups of energy efficiency solutions are still in place. High energy taxes also contribute to supporting energy efficiency.

Sweden continues to support municipalities in improving energy efficiency. All 290 local authorities have been granted aid to set municipal energy efficiency targets and work towards them. No new measures were implemented for the **public sector**.

Sweden has set itself a specific target for 2050 for the **buildings sector**. However, only one third of the surveyed experts believe that Sweden is on track to meet its obligation under the Energy Performance of Buildings Directive (EPBD) that all new buildings must be "nearly zero-energy buildings" by 2020. All measures such as minimum requirements, technology procurement and energy and climate advisors are being continued. Yet, building codes in Sweden are considered relatively weak by experts.

Policies for **appliances** are very much influenced by the EU Ecodesign and Labelling Directives. Sweden is particularly active in the negotiations and implementation, and there is a good consensus among stakeholders.

In the **Industry, Tertiary and Agriculture Sector**, Sweden abandoned the PFE programme, which was an energy intensive industry programme that focused on voluntary agreements that were combined with economic incentives. As the tax reduction for participating companies was not in-line with EU rules for state aid, the programme had to be cancelled. The government is currently exploring new design options.

Sweden is the only country that includes the **transport sector** in the baseline calculation for its 2020 target. Sweden has emission standards for the procurement and leasing of green vehicles by local authorities. Also, lower speeds, eco-driving and

a CO_2-based road tax/vehicle power are among the policies promoting energy efficiency in the transport sector.

7.28.3 Recommendations

Further improvements to the policy package could be the following:

- The **governance framework** should be relying less on high taxes alone, and develop complementary measures. For instance, it should seek to continually develop the energy service (ESCO) market. While Sweden has a comparatively strong ESCO market, the market does not seem to be getting to the deeper levels of energy efficiency that are available. To help remedy this, the development of new business models and certification of energy efficiency retailers could be implemented.
- The technology procurements in the **public sector** have led to a push for energy efficiency at the local level. Yet, more can be done through public procurement and the buyer's groups to aggregate volume and pull new technology or solution procurement ahead. Additionally, the renovation target of the public sector is lagging behind in the implementation as well as the implementation of nearly-zero energy buildings. It is therefore recommended to make this a priority and include public buildings into a long-term policy strategy for the buildings sector.
- As high investment costs are perceived as a barrier for much needed new dwellings, it is recommended to implement further financing instruments for the **building sector**. In addition, municipalities cannot set energy efficiency requirements on new buildings beyond national building codes. This has restricted innovation in new building designs. Overall, building codes in Sweden should be strengthened and financial incentives to support investments should be considered, especially for low income households.
- With regard to the **industry and tertiary sector**, the PFE programme for the energy intensive industry was very successful. A similar scheme in line with the EU rules for state aid should be implemented.

7.29 United Kingdom

7.29.1 Overview of Findings

The screening of the NEEAP from the United Kingdom (UK) shows an energy efficiency strategy with limited ambitions. UK experts confirm that relatively little progress with regard to energy efficiency polices has been made since the second NEEAP.

However, the implementation of the Energy Performance of Buildings Directive (EPBD) is progressing. A legislation about minimum efficiency standards for rented buildings, both residential and commercial has been adopted. Its requirement should apply from

2018 onwards. Efficiency standards are not properly enforced by local governments. According to UK experts, a systematic approach towards energy efficiency, particularly in the residential sector is missing. This also applies for local authorities who often lack capacities to develop long term strategies.

The Energy Company Obligation (ECO) was introduced in 2013. An important dimension of this programme is to tackle fuel poverty. It also had aims to reduce carbon emissions and to grow the market for more expensive technologies such as solid wall insulation. Energy suppliers are obligated with targets to take action to improve insulation and heating efficiency in households in order to achieve reductions in energy usage and heating costs. ECO is funded by the larger energy suppliers. It was however argued by them that the scheme is too expensive. Thereafter, targets were reduced. The current obligation is due to finish in 2017, but a new obligation will be introduced to cover the period from 2017 to 2022. Also, the Green Deal, a financing programme for energy efficient retrofits in buildings was launched in 2013, but its funding support was cancelled in 2015 due to a low uptake.

7.29.2 Sectoral Progress

The overarching energy efficiency **governance framework** is set by The Department of Energy and Climate Change (DECC) as well as the Department of Communities and Local Governments. An Energy Efficiency Strategy was launched as the first overarching strategy addressing market barriers, consumer behaviour and policy interaction. Article 7 of the EED is implemented by an Energy Efficiency Obligation in combination with alternative measures. However, the energy saving targets under the current energy efficiency obligation scheme for energy suppliers (ECO, Energy Company Obligation) are much lower than those of its predecessors, CERT and CESP. Programmes for achieving CO_2 emission reduction targets in the **public sector** were strengthened by increasing funding to £18 million (approx. EUR 24.5 million). Yet, energy efficiency refurbishment targets for local authorities were removed.

In the **building sector**, the government has cancelled the 2016 introduction of the Zero Carbon Homes standard. The government is expected to explain during 2016 how to meet the nZEB requirement. Experts rate the effectiveness of energy efficiency requirements for renovated buildings in the UK as “quite low”. The Energy Company Obligation (ECO), which replaced the Community Energy Programme (CESP) and the Carbon Emissions Reduction Target (CERT) encourages the installation of energy efficiency technologies and investments in households to tackle the issue of fuel poverty, reduce carbon emissions and grow the energy efficiency market. Also, legislation on smart meters has been improved. Yet, due to the cancellation of the Green Deal funding support, financing of energy efficiency actions in the building sector has been reduced.

Energy efficiency policies for **appliances** are still based to a large extent on EU legislation. Information is provided through the Energy Saving Trust. No changes or additional measures are mentioned in the NEEAP.

The UK policy for the **industrial and tertiary sector** continues to follow a market mechanism approach. An Electricity Demand Reduction pilot was launched, which is an auction mechanism to reduce demand for electricity at peak times addressing business and other organisations. The first phase of the pilot took place in January 2015, while the second phase was launched in June 2015 with £6 million (approx. EUR 7.8 million) of funding available. In 2013, the government introduced a Mandatory Greenhouse Gas Reporting Scheme for all quoted companies. The UK is therewith the first country in the world, where quoted companies have to include emission data for their entire organisation in their annual reports. The Climate Change Agreements, under which energy-intensive industries are given a reduction in the Climate Change Levy in return for meeting energy efficiency targets are being continued successfully. This area of policy is now under review by the Treasury and DECC – the aim is to simplify the regulatory requirements on businesses, but to maintain or improve effectiveness in terms of carbon emissions reductions.

In the **transport sector**, financial support is given to the development of ultra-low emission vehicles as well as for charging infrastructure and consumers. Furthermore, rail network electrification is being continued. For company cars, emission limits are continuously tightened. Yet, experts report that a focus is set on alternative fuels rather than on energy efficiency.

7.29.3 Recommendations

Further improvements to the policy package could be the following:

- The largest problem of the **public sector** are public spending cuts. This creates uncertainty and inhibits the work of local authorities. It is therefore recommended to ensure that local authorities have a facilitated access to financial means dedicated to energy efficiency.
- With the cancellation of finance support to the Green Deal, a specific instrument to stimulate demand for building renovations is currently missing. It is therefore recommended to introduce targeted financing activities for the **building sector**.
- For the **industry and tertiary sector**, policies for SMEs should be developed. These could for example be in the form of tax incentives for energy efficiency. Currently, SMEs cannot access financing for energy efficiency as they are considered as too risky. The government should therefore consider to issue bank guarantees or to further back third part finance of energy efficiency actions.
- It is further recommended to enhance information as well as education measures in the **appliances sector**.
- With regard to the **transport sector**, the use of bicycles could be encouraged further by appropriate infrastructure.

8 Key policy conclusions

The Energy Efficiency Watch Project is able to provide key conclusions about effective policy making for energy efficiency. The conclusions of this report are a synthesis of the results of 1) a screening of EU-28 policy documents, 2) a survey among 1100 energy experts from all EU countries and 3) a business stakeholder consultation in five selected EU member states.

EEW3 delivers practical evidence on where the implementation of energy efficiency policies stands, what is working well, what less - and why this is the case. Furthermore, ideas are provided on policy development enabling the transition towards a green industrial policy.

EU energy efficiency policies are mainly shaped by four directives:

1. Energy Efficiency Directive (2012/27/EU, EED)
2. Energy Performance of Buildings Directive (2010/31/EU, EPBD)
3. Ecodesign Directive (2009/125/EC, ED)
4. Labelling Directive (2010/30/EU, ELD)

All four directives have a track record of increasing energy efficiency in the EU. They are enabling business in various sectors: building renovation, industrial production, transport systems, procurement of energy efficient products, various standalone business models, etc. While the EU directives have defined the way forward, the effectiveness of the individual directives varies. EEW3 highlights considerable progress in national implementation, but also shows a wide gap for reaching the full energy efficiency potential and targets.

The following sections provide general recommendations to improve the effectiveness of energy efficiency policies as well as specific recommendations for each of the four directives mentioned.

8.1 General recommendations to improve the effectiveness of policies

1100 stakeholders from all 28 EU member states were approached by EEW. Coming from different backgrounds (businesses, agencies, academics, governments & public institutions), they all had a positive attitude towards energy efficiency policies, agreeing that opportunities clearly outweigh the risks. Europe becoming ‘number one on energy efficiency’ is connected to many opportunities such as job creation, increased competitiveness, improved air quality, climate protection, stimulating innovation and improved energy security. However, policies are only regarded as supportive in this respect if effective and stable. If policies are frequently changing, if their structure and implementation is intransparent, especially commercial stakeholders will perceive them more as a burden than as a support for their business.

Effective policies can be facilitated by implementing the following recommendations:

1. Developing positive European and national narratives on energy efficiency

2. Better communication and higher effectiveness of energy efficiency policies
3. Fostering innovative business models
4. Introducing binding and specific targets and effective financial instruments

8.1.1 Developing positive European and national narratives on energy efficiency

Energy efficiency provides the chance to achieve climate targets, a strengthened economy, and energy security all at the same time. So far, EU directives have not been able to create a common understanding of the multiple benefits of energy efficiency for all EU Member States and the variety of their citizens, companies, and public authorities. Experience from various Member States shows that the added value of energy efficiency needs to be explained and communicated by national governments in order to implement successful policies and create broad acceptance and subsequent political majorities in favour of energy efficiency. The same holds for EU level policies.

Guiding the development of positive national narratives on energy efficiency, an EU debate or a joint vision on energy efficiency is essential to encourage countries to act on energy efficiency. Especially now that energy security is high on the political agenda of many countries, this narrative can be used to create a common incentive in creating strong energy efficiency policies. In addition to energy security, the narrative on increased competitiveness, economic growth, employment, health, and, finally, climate and environment, can help to bring all countries together, jointly realising the aim of the 2020 Strategy: smart, sustainable and inclusive growth.

The Concerted Actions were launched to support the implementation of European directives. National authorities meet regularly to informally share information and best practices to successfully implement the directives and avoid pitfalls. The Concerted Action on EED should assist countries to develop their national narratives, framing energy efficiency policy as an investment, not a burden.

Existing national narratives on energy efficiency

In Germany, the national narrative originates from a long lasting debate about reducing economic vulnerability by the right fuel mix. It received its final political push in 2011 by the Fukushima nuclear accident, resulting in a broad majority of supporters for the energy transition, the so-called Energiewende, with a strong focus on energy efficiency. National consensus is based on the strong economic and technological dimension of the Energiewende, in combination with both ecologic aspects and the debate on security of supply.
In the 1970s, Denmark had an exceptionally high dependency on oil in its energy mix with more than 90% of its energy supply based on imported oil. Thus, the oil crisis in 1973 and 1979 created significant economic difficulties for the country. These crises however pushed energy efficiency, renewables and, for some time, also coal in combination with agricultural and social policies (IRENA 2013). Now, Denmark is one of the leading countries in the development of renewable energy and energy efficiency in the world (WWF 2013). It has achieved a well-accepted balance between security of supply, agricultural and social politics, and ecological matters.

In countries, where the national narrative on energy efficiency is not yet very strong (e.g. many Central and Eastern European countries), and economic development is higher on the agenda than e.g. climate policy, political discussions should emphasize the multiple benefits of energy efficiency such as:

- Technological transition and boost of innovation, accompanied by business opportunities especially in struggling regions, such as creation of new qualified jobs, and increased international competitiveness
- Leveraging co-benefits: improved energy security, fighting energy poverty, improving air quality etc.

Positive benefits of a higher efficiency target on the decrease of the energy bill and the reduction of import dependency should be clearly shown in the upcoming Impact Assessment for the non-ETS sectors of the European Commission.

To find the right way of highlighting the multiple benefits of energy efficiency in the respective national context, results from IEA and the Horizon 2020 project 'COMBI' can be used. It is also important to listen more to the business community about how their market perspectives can be supported by effective policies. Where arguments for energy efficiency can be matched better with respective national priorities, also policy stakeholders who have so far been sceptic about EU driven energy policies could be persuaded to develop a positive narrative for energy efficiency.

Such a process should be sufficiently reflected by e.g. the Concerted Action and in EU research programmes like Horizon 2020.

8.1.2 Better communication and higher effectiveness of energy efficiency policies

It must be acknowledged that energy savings with the related terminology and methodology can be a rather complex matter. Policy instruments to a certain extent must take into account this complexity (e.g. for target setting, quantification of savings, monitoring and verification). On the other hand, business stakeholders (e.g. companies dealing with energy efficiency) regard the need of upfront information as transaction cost. I.e. the higher the complexity of a program, the lower they will rank its attractiveness for supporting a profitable business. This can lead to the dilemma that, together with frequent changes of terms and conditions, energy efficiency programs are not used by the target group. At the side of policy makers, this effect can lead to the perception that there was no need for energy efficiency support policies, and programs are abandoned instead of improved.

Thus, there is a need to put more focus to the translation of complex methodologies and terminologies into easily applicable and reliable, continuous implementation programmes.

Here, the National Energy Efficiency Action Plans (NEEAPs) and other reporting play an important part, providing information about the quality of explanation of policies and allowing comparisons between the member states. There is also a need for a joint and coherent analysis of potentials, technology roadmaps, transformation pathways and end-points, and scenarios between Member States and the different EU directives. Based on this, policy makers must pay sufficient attention to reducing transaction cost for market actors and create attractive policy packages (i.e. combinations of policy instruments reinforcing each other, e.g. the policy packages recommended by Energy Efficiency Watch 2). The European Commission could take the lead.

In this sense, it is recommended to include in the compatibility evaluation of national policies with EU directives criteria for the effectiveness of policies such as:

- attractiveness to the target groups,
- streamlined participation,
- sufficient funding to achieve potential,
- awareness of the policy and benefits by the target groups.

Exemptions from EU Directives should be abolished or reduced. National target debates often focus on making the best bargain with exemptions (most notably the exemptions in the EED, cf. below) rather than ambitious energy efficiency policies as a chance for economic prosperity. Further action in terms of translating the complexity of directives and clearly defining actions is needed (e.g. the implementation of public procurement, which is still subject to interpretation). A Concerted Action committee could deal with policy coordination and coherence. It could provide concrete advice on how to translate regulation from EED, EPBD, Ecodesign/Labelling and the Renewable Energy Directive into policy measures tailored to their respective target group implying low transaction cost and providing transparency and continuity for building business cases around them.

8.1.3 Fostering innovative business models

One of the general barriers for energy efficiency, continuously observed since EEW1, is a structural conflict of interest with existing business models in the energy sector. Commercial stakeholders making profits on selling energy will not be in favour of cutting their markets by reducing the overall consumption of energy - and mobilize their lobby power accordingly - unless they are provided with a clear route towards alternative business models.

One aim of the EED is to establish an energy service market. Yet, each country follows different routes in implementing such a market. The definition of Energy Service Companies (ESCOs) is kept very wide, and focusses in some cases just on selling energy efficiency products, while the supply side remains unchanged. Current business models of energy suppliers require a fundamental transformation, where companies can capitalise energy savings as core part of their business (e.g. energy performance contracting).

Countries that have been able to develop innovative energy services are for example Denmark, Italy and France, while results in the UK are mixed. In Germany, it is more the suppliers of energy efficient products and materials that are benefitting from the existing subsidy schemes. Well-designed energy efficiency obligations (EEOs) provide opportunities for project developers to identify and commercialise savings potentials that are more difficult to address e.g. under subsidy schemes. EEOs can also provide the structural advantage of creating one single market for savings, instead of tackling savings potentials by a multitude of single measures. EEOs are not necessarily the best option for all countries. But it is recommended that countries revise their policies, fostering innovative energy efficient services, enabling the transition towards business models generating revenues from energy savings, and no longer from selling energy. Also, the creation of 'energy savings networks' has shown good results in many EU countries.

Energy Performance Contracting

Business approaches for energy performance contracting have been around already for two decades. A service provider ensures that ambitious saving measures are implemented at the client's side and thus his or her energy bill is reduced. Part of the money the client saves is paid as a regular fee to the service provider for a determined period. So far, in most countries energy performance contracting finds only a niche market, impeded by administrative and legal barriers. However, there are some good practice examples of how to further encourage this business. Especially the Czech Republic, Sweden and Austria have created advanced markets by declaring Energy Performance Contracting a priority in the energy-efficiency sector (Transparense 2013). Best practice can be found in an EEO guidebook.

Going along with the above, it is important to create favourable conditions for international energy efficiency service business. So far, each country is developing its own energy services sector. It is not possible, for instance, for a project developer operating under an EEO in his or her country may not be able to expand to another EU country, as some systems by design give preference to domestic players. In order to realise economies of scale on European level, national schemes should also be made accessible for service providers from other EU countries, e.g. by applying European tendering rules. This does not mean, however, to allow international trade of White Certificates, which would create complex problems of their comparability.

8.1.4 Introducing binding and specific targets and effective financing instruments

To define and measure the aimed effect of any policy, it is essential to have binding and specific targets in place. Therefore, policy measures mentioned in the NEEAPs should always be connected to a specific target, as a breakdown of a specific and binding national and EU targets for final and primary energy consumption. Acceptance for targets in member states can be increased if they are asked to suggest measures with respective targets, which in a bottom up process accumulate to a national target.

Energy efficiency has the potential to become the number one solution for economic recovery in the EU, under the condition that the available money is used in the right way. Structural Funds are a very strong instrument. However, the current handling is too bureaucratic and often problematic. This has led to a paradox situation where there is not a lack of financing options for energy efficiency measures per se, but rather a low absorption capacity of EU funds, especially from the EU-13 countries. To increase this absorption capacity, the following conditions will need to be improved:

- Streamline administrative requirements across all levels (EU, national, regional) and avoid accumulation of rules coming from different level
- Developing information/visibility of financial instruments together with local agents
- Increasing technical assistance to potential project developers and applicants in combination with financial instruments by mobilising the amount of money earmarked for TA in the structural funds.

8.2 Detailed Recommendations for each Directive

8.2.1 The Energy Efficiency Directive

The Energy Efficiency Watch 3 project has identified only a few examples of significant improvement of NEEAPs (cf. EEW3 Country Reports). The review of the EED planned for 2016 is an important opportunity to advance energy efficiency policies in all Member States.

Recommendations for the review of the EED

- Expand the EED's timeframe to 2030, especially Article 7.
- Remove exemptions for phasing-in measures and for counting savings achieved in the past, but include energy used in the transport sector when calculating the Article 7 energy saving target. Almost all Member States have made use of these exemptions. Removing them would increase the delivery of savings to be achieved.[29]
- Provide more verification of the calculation of the target and the energy savings. The use of calculation methods and data is often not fully explained. In particular:
- Provide more harmonisation and verification of the eligibility of measures, materiality and additionality of savings and double counting. This includes in particular additional savings from standards such as building standards, taxation measures and use of price elasticities as well as support measures for renewable energy which are unclear or possibly not eligible. Many Member States might exaggerate the impact of their policies and measures.
- Install robust systems for monitoring, reporting and verification. Measuring needs to be transparent and as standardised as possible.
- Further support the removal of market barriers (e.g. further develop financing instruments/initiatives and provisions to support ESCO services related to building

[29] For further reading see Coalition for Energy Savings (2015) and Ricardo-AEA (2015).

renovation and industrial energy efficiency).
- Implement a 3% renovation rate for all public bodies, not only for national governments.
- Consider if state expenditure for energy efficiency policy and its implementation agencies can be exempt from counting to Member States' public debt, as revenues from it to the state budget are often higher than expenditure.
- Overall, discount rates should be revised for the impact assessment.[30]

8.2.2 The Energy Performance of Buildings Directive

Building renovation rates need to be increased, and renovations need to achieve "deep" savings instead of the current focus on maintenance and insufficient measures.

Recommendations for the review of the EPBD

- Strengthen and clarify provisions on renovation of existing buildings (e.g. have a more specific definition of major renovation and the required actions and standards, strengthen provisions on compliance).
- Introduce, in addition to primary energy as currently leading indicator of energy performance,
  - the indicator of CO_2 to reflect climate targets.
  - an energy need indicator to be able to ensure (in parallel to the definition of nearly zero energy buildings) low heating and cooling energy demands of buildings.
- Introduce definition / requirements on renovating existing buildings into definition of nearly zero energy buildings.
- Further develop requirements on energy performance certificates to support their increased acceptance and uptake (e.g. through a stronger connection to support schemes and shaping the Energy performance certificates to include building specific renovation roadmaps towards deep renovation and built on life-cycle costs / cost-optimality instead of short payback times).
- Give more guidance on the definition of nearly zero energy buildings and on how to roll them out in Member States
- Organise a joint EU-wide effort of the Member States to reduce costs of deep renovation, including by coordinating national building renovation roadmaps and streamlining financial incentive schemes provided under the EED.
- Consider introducing one or more measurable and trackable targets to the EPBD (e.g. achievement of (primary) energy and CO_2-savings in 2030/40/50).

8.2.3 The Energy Labelling and Ecodesign Directives

The evaluation of the ELD and ED by the European Commission highlights the revision of the energy label and the lacking speed of market surveillance. It is estimated that 10

[30] For further reading see ECEEE (2015).

– 25% of non-compliance exists in European markets and that 10% of potential energy savings are lost because of this.

Elements to consider for the Energy Labelling and Ecodesign Directives

Ecodesign Directive

- For some product groups the ambition level is too low compared to what is economically and technically feasible. Learning from previous experience (institutional memory, sufficient attention to technical standards supporting regulations and available data of sufficient quality) to create high ambition levels for all product groups.
- Pay more attention to energy consumption of products in the regulatory process, rather than energy efficiency to not inadvertently promote larger appliances. This would, for instance, translate into so-called "progressive standards" with increasing stringency as products grow bigger.
- Develop methods to systematically taking learning curves into account so that unnecessarily conservative standards are being avoided because of the false assumption that costs for industry to meet the requirements are higher than they actually are.
- Develop support to workers in industries to lose out from rapid innovation due to eco-design.
- The rulemaking process is too long. Sometimes, the data from the preparatory studies and working process are outdated when the implementing measures come into force. Sufficient and qualified staff in the European Commission is needed and product-specific working plans should be published and updated regularly to accelerate the process.
- Take greater account of resource efficiency, health aspects, recycling and reparability in the rulemaking process. So far these topics are underrepresented.
- Update the Ecodesign working plan regularly and adapt the plan to the current market developments.

Energy Labelling Directive

- Make the energy label clearer to consumers and return to the well-known A-G label scale for products, including a rescaling process for existing labels. The class A should be held empty initially for the best not available products (future top-runner products)
- Analyse the consumer behaviour and calculate the energy efficiency classes based on the actual behaviour of the user.
- Use a new graphic design and change all existing labels simultaneously. Use pictograms that are easy to understand and highlight the concrete annual energy consumption data in kWh. This should be communicated to consumers.
- Develop a database for all products on the market that have an energy label. This allows greater transparency and easier market surveillance.
- Address the untapped potential and regulate further product groups by the Energy Labelling Directive.
- Rescale the label when class A is occupied by a certain percentage of products.

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