Final Report

Assessment of the implementation status and effectiveness of Article 17 of the Energy Efficiency Directive

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ABSTRACT

This report provides recommendations to the European Commission and Member States based on an assessment of the implementation status and effectiveness of Article 17 of the Energy Efficiency Directive (EED) across the European Union Member States. Article 17 provides a framework on broad dissemination of information and availability of training initiatives related to energy efficiency. Besides Article 17, Member States have to introduce national measures to provide information on the energy performance of buildings and to create a framework for developing skills, such as energy audits. Given their cross-cutting nature, the measures addressing these obligations in other articles of the EED (i.e. Articles 8, 12, 16 and 19), as well as the EPBD (Articles 17 and 20) were also considered. Based on the Member States' National Energy Efficiency Action Plans, an overview was made of the implementation status and the measures implemented by all Member States to ensure wide dissemination of information to market actors and citizens. Moreover, an assessment of the measures' effectiveness was carried out for a selection of ten representative Member States, following the intervention logic of inputs-outputs-effects of effective policy design, implementation and monitoring. The study provides also insights in the types of information measures targeted at financial institutions to stimulate the uptake of energy efficiency investments.

Résumé

Ce rapport présente à la Commission européenne et aux États membres des recommandations fondées sur une évaluation de l'état de mise en application et de l'efficacité de l'article 17 de la Directive sur l'efficacité énergétique (DEE) dans l'ensemble des États membres de l'Union européenne. L'article 17 fournit un cadre sur la diffusion étendue d'informations et la disponibilité des actions de formation liées à l'efficacité énergétique. Outre l'article 17, les États membres doivent instaurer des mesures nationales pour fournir des informations sur la performance énergétique des bâtiments et créer un cadre pour le développement de compétences, comme les bilans énergétiques. Eu égard à leur nature transversale, les mesures qui répondent à ces obligations dans d'autres articles de la directive DEE (à savoir les articles 8, 12, 16 et 19), ainsi que la directive PEB (articles 17 et 20) ont également été prises en compte. En fonction des plans nationaux d'action des États-membres en matière d'efficacité énergétique, un panorama de l'état de mise en application et des mesures mises en œuvre par l'ensemble des États membres a été établi pour assurer une large diffusion des informations aux acteurs du marché et aux citoyens. En outre, une évaluation de l'efficacité des mesures a été menée pour un éventail de dix États membres représentatifs, en suivant la logique d'intervention d'entrée-sorties-effets de la conception, de la mise en application et de la surveillance effectives de la politique. L'étude apporte également un éclairage sur les types de mesures d'information visant des établissements financiers pour encourager les investissements dans l'efficacité énergétique.

EXECUTIVE SUMMARY

The objectives of this study are to assess the implementation status and the effectiveness of Article 17 of the Energy Efficiency Directive (EED) across the EU-28. More specifically this study includes an overview of the implementation status and the measures introduced by all Member States to ensure wide dissemination of information on energy efficiency measures and financing instruments to market actors and citizens. In addition, an assessment of the measures effectiveness is made for a selection of ten representative Member States. Given their cross-cutting nature with Article 17, the measures addressing the obligations in other articles of the EED (i.e. Articles 8, 12, 16 and 19), as well as the Energy Performance of Buildings Directive EPBD (Articles 17 and 20) are also considered in the analysis.

Gathering evidence about the implementation of Article 17 within all EU-28 Member States, relies strongly on the submissions of Member States' National Energy Efficiency Action Plans (NEEAPs). The information availability across all NEEAPs in order to describe the implementation status of the adopted measures ranges from adequate to satisfactory. However, information on monitoring results and detailed ex-post or ex-ante evaluations is often not reported.

The number of information and training measures or initiatives submitted in the NEEAPs varies significantly among Member States. Furthermore, if a National Energy Efficiency Action Plan consists of separate regional plans, the number of observed measures is seen to increase. Based on the information provided in the NEEAPs and feedback obtained from Member States, it can be concluded that:

- starting year for implementation of measures ranges from 2008 to 2016, with the mathematical average for all Member States being 2013. This reflects the recent to very recent period of implementation of measures in half of the Member States;
- the final customers and building professionals are the main market actors targeted by the Member States with information and training initiatives. Also, small and medium-sized enterprises (SMEs) are quite frequently in the scope of the initiatives;
- although an explicit aim of Article 17 to ensure provision of information towards financial institutions, only a few Member States have notified measures in their NEEAPs targeting banks and other financial institutions;
- the information and training measures are mainly aimed at energy savings in the building sector;
- based on the observations, the preferred dissemination channels are websites, training and other means such as events and demonstration projects.

The effectiveness of information and training measures is assessed following the intervention logic of inputs, outputs and effects as defined by the policy evaluation framework from the European Environmental Agency (EEA). It relies mainly on qualitative evidence from literature and a compiled overview of measures reported in the NEEAPs. The general lack of robust and comparable monitoring results and ex-post (or ex-ante) evaluations of information and training measures, hampers an in-depth analysis of inputs, outputs and effects. As a consequence, it is not possible to triangulate the evidence for each element of the intervention logic and for each of the selected Member States.

In literature, several success factors are recommended to integrate during the design and implementation process of policy measures to improve their effectiveness (inputs). This study focuses on success factors that are also part of the design and implementation process of information and training measures in the ten selected Member States. Each of the success factors is illustrated by good examples from the selected Member States:

- existence of clear short and long term policy objectives,

e.g. Italia in Classe A (Italy), Renovation (modernisation) of multi-apartment blocks (Lithuania);
- clear mandate for the implementing entity,
  e.g. Motiva (Finland), Slovak Innovation and Energy Agency SIEA (Slovakia);
- ability to adapt to and integrate adjacent policy measures and develop coherent policy packages,
  e.g. Dutch Energy Agreement for Sustainable Growth (the Netherlands), National Development Plan for Estonian Housing sector 2008–2013 (Estonia);
- involvement of stakeholders, including financial institutions,
  e.g. Better Home Scheme (Denmark), Motiva (Finland);
- design according to the needs and background of specific target groups,
  e.g. surveys Flemish Energy Agency of households & SMEs (Belgium), energy scans for SMEs (Belgium);
- needs of target groups and policy objectives determine the means or channels for disseminating information and organising training,
  e.g. LED campaign in the retail sector (Denmark), yearly communication campaigns (Spain), awareness raising campaign "Save Energy now" (the Netherlands), Nearly Zero Energy Building training (Belgium), Improve Skills and Qualifications in the Building Workforce (Cyprus).

For the ten selected Member States reviewed for this study, the success factors of effective dissemination policy design and implementation are only identified to a limited extent in literature (including the NEEAPs themselves).

In relation to information provision towards financial institutions and banks which affects the supply of finance for energy efficiency investments, the analysis indicates a significant lack of initiatives reported by Member States in the NEEAPs. Based on the in-depth collection of evidence (literature review and telephone interviews), measures from the ten selected Member States as well as the EU level are mapped across four key drivers. The following lessons for further action are formulated for each driver to improve the effectiveness of dissemination of information towards financial institutions and banks. Each of the lessons is illustrated by good practices from the Member States examined in detail or at EU level:

- national promotion and support of European standardisation and benchmarking initiatives: although there are several large European initiatives in these areas, there are no national initiatives identified nor specific national actions supporting those EU initiatives. Member States are recommended to send strong support signals around the value of existing EU initiatives.
  E.g. standardisation practices: Energy Efficient Mortgages (EU), EEFIG Underwriting Toolkit (EU) and Investor Confidence Project ICP (EU) – benchmarking practices: EEFIG De-risking Energy Efficiency Platform DEEP (EU) and Energy Efficient building district Database ExcEED (EU);
- monitoring, reporting and verification (MRV) of energy efficiency investment projects: although there are notable global initiatives aimed at standardising the MRV process (e.g. the Efficiency Valuation Organisation's International Performance Measurement and Verification Protocol (EVO IPMVP) and international standards such as ISO 17743:2016 and ISO 17741:2016), the adoption of this standardised approach is not sufficiently promoted at Member State level;
- technical assistance and capacity building: technical assistance provided to financial institutions as part of EU initiatives is rarely an integral part of Member State-led financial instruments across the ten cases examined. In contrast, at the EU as well as at the Member States level initiatives are taken to support the capacity of financial institutions and banks to affect the supply of finance for energy efficiency investments. The design and implementation of capacity building measures such as training and expert sessions, preferably consider the mapped needs of stakeholders.
  E.g. technical assistance: Private Finance for Energy Efficiency PF4EE Expert Support Facility (EU), European Investment Advisory Hub EIAH (EU) and European Local Energy Assistance ELENA (EU) – capacity building practices: Green Deals (the Netherlands), Better Home Scheme (Denmark), EEFIG National (EU) and Sustainable Energy Investment Forums SEIFs (EU).

The European Commission should endeavour to identify those Member States currently failing to engage in EU energy efficiency financing initiatives and support them by illustrating how EU information initiatives might help to improve their domestic supply side capability.

Monitoring is an important part of the implementation of Article 17 as it provides an insight into the efficiency and effectiveness of the measure in question. It also allows policy makers to adjust the design and/or the implementation process of the measure to achieve the desired outputs. Good practices of monitoring can be found in Spain (series of yearly large communication campaigns) and in Belgium (large-scale roof insulation campaign). The assessment indicates that most of the measures implemented by the selected Member States are monitored by means of basic performance indicators, such as the number of participants to the training and the number of campaign views. In addition to these basic performance indicators, Member States are recommended to carry out more frequent monitoring campaigns to estimate the raise of the measure's awareness level across market actors, besides the reach of the measure and its recall by the target audience.

The assessment indicates very limited quantification of the extent to which information provision, awareness raising and training measures have contributed to the actual uptake or investments in energy efficiency improvements and to the actual energy savings (effects). Moreover, comparison of effects of Member States initiatives is hampered because it is often unclear how they are measured or estimated, moreover they are expressed in different ways. Therefore, Member States are recommended to evaluate (ex-post) their information provision, awareness raising and training more frequently. The quality of these evaluations should preferably be improved too, although literature acknowledges that the methods to assess this type of policy measures are less robust than for other types of policy instruments, such as financial instruments. A good example can be found in Finland where the effects of the so-called soft energy efficiency measures taken as part of the Finnish Energy Services Action Plan towards Customers (i.e. voluntary energy efficiency agreement for businesses) are estimated in a transparent and sound way.

RESUME ANALYTIQUE

Les objectifs de cette étude sont d'évaluer l'état de mise en application et l'efficacité de l'article 17 de la Directive sur l'efficacité énergétique (DEE) dans les 28 États membres de l'UE. Plus précisément, cette étude inclut un panorama de l'état de mise en application et des mesures instaurées par tous les États membres pour assurer une large diffusion des informations sur les mesures d'efficacité énergétique et des instruments de financement aux acteurs du marché et aux citoyens. En outre, une évaluation de l'efficacité des mesures est effectuée pour une sélection de dix États membres représentatifs. Eu égard à leur nature transversale avec l'article 17, les mesures qui répondent aux obligations énoncées dans d'autres articles de la directive DEE (à savoir les articles 8, 12, 16 et 19), ainsi que dans la directive PEB relative à la performance énergétique des bâtiments (articles 17 et 20) ont également été prises en compte dans l'analyse.

Réunir des preuves sur la mise en application de l'article 17 au sein des 28 États membres de l'UE dépend en grande partie des soumissions par les États membres des plans nationaux d'action en matière d'efficacité énergétique (PNAEE). La disponibilité des informations pour l'ensemble des PNAEE pour décrire l'état de mise en application des mesures adoptées va d'adéquate à satisfaisante. Pour autant, les informations sur les résultats de la surveillance et les évaluations ex-post ou ex-ante détaillées ne font souvent pas l'objet de comptes rendus.

La quantité d'informations et le nombre de mesures ou d'actions de formation soumises dans les PNAEE varient de manière importante d'un État membre à l'autre. En outre, si un plan national d'action en matière d'efficacité énergétique se compose de plans régionaux séparés, l'on constate une augmentation du nombre de mesures observées. En fonction des informations fournies dans les PNAEE et des commentaires obtenus auprès des États membres, il est possible de conclure que :

- l'année de démarrage de la mise en application va de 2008 à 2016, la moyenne mathématique pour l'ensemble des États membres étant 2013. Cela reflète la période récente à très récente de la mise en application de mesures dans la moitié des États membres ;
- les clients finaux et les professionnels du bâtiment sont les principaux acteurs du marché ciblés par les États membres à l'aide d'informations et d'actions de formation. Par ailleurs, les petites et moyennes entreprises (PME) figurent très fréquemment dans le champ d'application des actions ;
- bien qu'un objectif explicite de l'article 17 pour assurer la communication d'informations aux établissements financiers, seuls quelques États membres ont inscrit dans leurs PNAEE des mesures ciblant les banques et autres établissements financiers ;
- les mesures d'information et de formation visent principalement les économies d'énergie dans le secteur du bâtiment ;
- en fonction de ces observations, les canaux de diffusion préférentiels sont les sites Web, la formation et d'autres moyens comme des événements et des projets de démonstration.

L'efficacité des mesures d'information et de formation est évaluée en suivant la logique d'intervention des entrées, sorties et effets tels que définis par le cadre d'évaluation de la politique de l'Agence européenne pour l'environnement (AEE). Elle s'appuie essentiellement sur des preuves qualitatives tirées de la documentation et sur une synthèse des mesures rapportées dans les PNAEE. L'absence générale de résultats de surveillance robustes et comparables et d'évaluations ex-post (ou ex-ante) des mesures d'information et de formation entrave une analyse approfondie des entrées, sorties et effets. En conséquence, il n'est pas possible de trianguler les preuves pour chaque élément de la logique d'intervention et pour chacun des États membres sélectionnés.

Dans la documentation, plusieurs facteurs de réussite sont recommandés pour être intégrés au cours du processus de conception et de mise en application des mesures de la politique pour en améliorer l'efficacité (entrées). Cette étude porte sur les facteurs de réussite qui font également partie du processus de conception et de mise en application des mesures d'information et de formation dans les dix États membres sélectionnés. Chacun des facteurs de réussite est illustré par des exemples probants des États membres sélectionnés :

- existence d'objectifs politiques clairs à court et à long terme,
  par exemple Italia in Classe A (Italie), Rénovation (modernisation) d'immeubles d'habitation (Lituanie) ;
- mandat clair pour l'entité chargée de la mise en application,
  ex. Motiva (Finlande), Agence slovaque pour l'innovation et l'énergie SIEA (Slovaquie) ;
- aptitude à adapter et à intégrer des mesures politiques adjacentes et à élaborer des programmes d'action cohérents,
  ex. Convention énergétique néerlandaise pour un développement durable (Pays-Bas), Plan de développement national pour le secteur du logement estonien 2008 – 2013 (Estonie) ;
- implication des parties prenantes, y compris des établissements financiers ;
  ex. Better Home Scheme (Danemark), Motiva (Finlande) ;
- conception en fonction des besoins et du contexte de groupes cibles spécifiques,
  ex. enquêtes sur les ménages et les PME (Belgique) de l'Agence flamande de l'énergie, analyses énergétiques pour les PME (Belgique) ;
- les besoins des groupes cibles et les objectifs des politiques déterminent les moyens ou les canaux utilisés pour la diffusion des informations et l'organisation des formations,
  ex. campagne LED dans le commerce de détail (Danemark), campagnes annuelles de communication (Espagne), campagne de sensibilisation "Économisons l'énergie maintenant" (Pays-Bas), formation Bâtiments à consommation d'énergie quasi nulle (Belgique), Améliorer les compétences et les qualifications dans la main-d'œuvre du bâtiment (Chypre).

Pour les dix États membres sélectionnés examinés pour cette étude, les facteurs de réussite de la conception d'une politique de diffusion et d'une mise en application efficaces sont seulement identifiés d'une manière limitée dans la documentation (y compris dans les PNAEE eux-mêmes).

En lien avec la mise à disposition d'informations aux établissements financiers et aux banques qui affecte la fourniture de financements pour des investissements dans l'efficacité énergétique, l'analyse fait ressortir un manque important d'actions rapportées par les États membres dans les PNAEE. En fonction du recueil approfondi de preuves (examen de la documentation et entretiens téléphoniques), des mesures des dix États membres sélectionnés ainsi que du niveau de l'UE sont cartographiées pour quatre facteurs essentiels. Les enseignements suivants visant à poursuivre l'action sont formulés pour chaque facteur en vue d'améliorer l'efficacité de la diffusion des informations aux établissements financiers et aux banques. Chacun des enseignements est illustré par de bons exemples des États membres examinés en détail ou au niveau UE :

- promotion nationale et soutien d'actions européennes de normalisation et d'analyse comparative : malgré l'existence plusieurs grandes initiatives européennes dans ces domaines, aucune initiative nationale ou action nationale spécifique étayant ces initiatives de l'UE n'a été identifiée. Il est recommandé aux États membres d'envoyer des signaux de soutien forts autour de la valeur des initiatives européennes existantes.
  Par exemple, pratiques de normalisation : Energy Efficient Mortgages (UE), EEFIG Underwriting Toolkit (UE) et Investor Confidence Project ICP (UE) – pratiques d'analyse comparative : EEFIG De-risking Energy Efficiency Platform DEEP (UE) et Energy Efficient building district Database ExcEED (UE);
- surveillance, notification et vérification (MNV) des projets d'investissement dans l'efficacité énergétique : malgré l'existence d'initiatives mondiales notables visant à normaliser le processus MNV (par exemple International Performance Measurement and Verification Protocol (IPMVP)

de l'Efficiency Valuation Organisation (EVO) et des normes internationales comme ISO 17743:2016 et ISO 17741:2016), l'adoption de cette démarche normalisée n'est pas suffisamment promue au niveau des États membres ;

- assistance technique et renforcement de capacités : l'assistance technique apportée aux établissements financiers dans le cadre des initiatives de l'UE fait rarement partie intégrante des instruments financiers pilotés par les États membres pour les dix cas examinés. En revanche, au niveau de l'UE comme à celui des États membres des initiatives sont lancées pour soutenir la capacité des établissements financiers et des banques dans l'objectif d'affecter la fourniture de financement pour les investissements dans l'efficacité énergétique. La conception et la mise en application de mesures de renforcement des capacités comme les sessions de formation et de spécialistes privilégient la prise en compte des besoins cartographiés des parties prenantes.
  Par exemple, l'assistance technique : Private Finance for Energy Efficiency PF4EE Expert Support Facility (UE), European Investment Advisory Hub EIAH (UE) et European Local Energy Assistance ELENA (UE) – pratiques de renforcement des capacités : Green Deals (Pays-Bas), Better Home Scheme (Danemark), EEFIG au plan national (UE) et Sustainable Energy Investment Forums SEIFs (UE).

La Commission européenne devrait s'efforcer d'identifier les États membres qui ne s'engagent pas dans des actions de financement d'investissements dans l'efficacité énergétique et les soutenir en illustrant comment les actions d'information de l'UE pourraient aider à améliorer leurs capacités nationales du côté offre.

La surveillance constitue une part importante de la mise en application de l'article 17 puisqu'elle offre un éclairage sur l'efficacité de la mesure en question. Elle permet aussi aux décideurs politiques d'ajuster le processus de conception et/ou de mise en application de la mesure pour obtenir les résultats souhaités. De bonnes pratiques de surveillance peuvent être constatées en Espagne (séries de grandes campagnes annuelles de communication) et en Belgique (campagne à grande échelle pour l'isolation des toitures). L'évaluation indique que la plupart des mesures mises en œuvre par les États membres sélectionnés sont contrôlées au moyen d'indicateurs fondamentaux de performance, comme le nombre de participants à la formation et le nombre de visionnages des campagnes. Outre ces indicateurs fondamentaux de performance, il est recommandé aux États membres de mener des campagnes de surveillance plus fréquentes en vue d'estimer la hausse du niveau de sensibilisation à la mesure chez les acteurs du marché, en plus de la portée de la mesure et de sa mémorisation par le public cible.

L'évaluation fait ressortir une quantification très limitée de la mesure dans laquelle la mise à disposition d'informations, les mesures de sensibilisation et de formation ont contribué à l'adoption effective ou à des investissements dans des projets d'amélioration de l'efficacité énergétique et aux économies d'énergie réelles (effets). De plus, une comparaison des effets des actions des États membres est entravée parce que la manière dont ils sont mesurés ou estimés est peu évidente et ils sont en outre exprimés de façons différentes. Par conséquent, il est recommandé aux États membres d'évaluer plus fréquemment (ex-post) leur mise à disposition des informations, leurs campagnes de sensibilisation et leurs formations. Il serait aussi souhaitable d'améliorer la qualité de ces évaluations, même si la documentation reconnaît que les méthodes employées pour évaluer ce type de mesures politiques sont moins robustes que pour d'autres types d'instruments de politique, comme les instruments financiers. Un bon exemple se trouve en Finlande où les effets des mesures dites générales relatives à l'efficacité énergétiques prises dans le cadre du Plan d'action finlandais pour les services énergétiques orienté clients (c.-à-d. Contrats volontaires liés à l'efficacité énergétique pour les entreprises) sont estimés de manière transparente et rationnelle.

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LIST OF ACRONYMS

CA	Concerted Action
DEEP	De-risking Energy Efficiency Platform
EC	European Commission
EE	Energy Efficiency
EED	Energy Efficiency Directive
EEFIG	Energy Efficiency Financial Institutions Group
EFSI	European Fund for Strategic investment
EIAH	European Investment Advisory Hub
EIB	European Investment Bank
ELENA	European Local Energy Assistance
EMS	Energy Management System
EPBD	Energy Performance of Buildings Directive
FI	Financial Institution
ICP	Investor Confidence Project
KPI	Key Performance Indicator
MS	Member State(s)
MMR	Monitoring Mechanism Regulation
MRV	Monitoring, Reporting and Verification
NEEAP	National Energy Efficiency Action Plan
NGO	Non-governmental organisation
PDA	Project Development Assistance
PF4EE	Private Finance for Energy Efficiency
PPP	Public Private Partnership
SEIF	Sustainable Energy Investment Forum
SME	Small and medium-sized enterprise

CHAPTER 1 INTRODUCTION

The Energy Efficiency Directive (EED) establishes a common framework of measures for the promotion of energy efficiency within the EU to ensure the achievement of the 20% headline targets on energy efficiency by 2020. It will also contribute to the proposed target of 32,5% by 2030. The EED brings forward legally binding measures to step up Member States' efforts to use energy more efficiently at all stages of the energy chain. Article 17 of the EED (see box) provides a framework on broad dissemination of information and availability of training initiatives related to energy efficiency. Besides Article 17, Member States have to introduce national measures to provide information on the energy performance of buildings and to create a framework for developing a specific set of skills, such as energy audits. Given their cross-cutting nature with Article 17, these measures addressing the obligations in other articles and annexes of the EED (i.e. Articles 8, 12, 16 and 19), as well as the EPBD (Articles 17 and 20) are also considered in context of the implementation of Article 17 of the EED.

Article 17: Information and Training of the Energy Efficiency Directive

Article 17 requires Member States to:

- Ensure that information on available energy efficiency mechanisms and financial and legal frameworks is transparent and widely disseminated to all relevant market actors.
- Specifically, provide information to banks and other financial institutions on possibilities of participating in the financing of energy efficiency improvement measures.

The relevant market actors in this area are: consumers, builders, architects, engineers, environmental & energy auditors and installers of building elements as defined in the Energy Performance of Buildings Directive 2010/31/EU.

In addition, Member States shall:

- Establish appropriate conditions for market operators to provide adequate and targeted information and advice to energy consumers on energy efficiency.
- With the participation of stakeholders, ensure information, awareness raising and training initiatives to inform citizens of the benefits and practicalities of taking energy efficiency improvement measures.

The Commission shall encourage the exchange and wide dissemination of information on best energy efficiency practices in Member States.

The objectives of this study are to assess the implementation status and the effectiveness of Article 17across the EU-28 Member States. Specifically, this includes:

- Assessing the implementation status and providing an overview of the measures introduced by all Member States to ensure wide dissemination of information on energy efficiency measures and financing instruments to the market actors and citizens. The results of the assessment are described in CHAPTER 2. This exercise is based on information provided in the submitted National Energy Efficiency Action Plans (NEEAPs) and Member States' feedback;
- Determining the effectiveness of these measures by assessing to what extent they have contributed to the uptake of energy efficiency improvement measures across the different sectors. To this end, ten Member States are assessed in more detail. CHAPTER 3 describes the findings of the assessment for information and training measures targeted at market actors and citizens. CHAPTER 4 provides insights in the types of measures towards financial institutions and banks that are implemented at EU level and by Member States to provide information.

The report concludes with recommendations for further actions to improve the implementation of Article 17 by the EU-28 Member States and the European Commission.

CHAPTER 2 IMPLEMENTATION STATUS

This chapter describes the overall implementation status of Article 17 in the EU-28 by giving an overview and description of the information measures and training initiatives adopted by the Member States. In their National Energy Efficiency Action Plans (NEEAPs) under the Energy Efficiency Directive, Member States list the measures in frame of the implementation of Article 17 and related articles, including their state of play and their effectiveness, as far as is available. The description of the measures comprises of a variety of indicators to allow a proper assessment of the implementation status, such as the type of information or training measures, the different sectors and market actors targeted by the adopted measures, as well as the means or channels used by Member States to implement the measures[1].

Gathering evidence about the implementation of Article 17 within all EU-28 Member States, relies strongly on the Member States' National Energy Efficiency Action Plans (NEEAPs) submissions. This study is based on information of NEEAPs from 2017 which were provided by Member States to comply with the EED. The NEEAPs of 2014 were also reviewed in certain cases e.g. to further clarify the characteristics of certain measures or if insufficient information was provided in the NEEAPs 2017. To further finetune the official reporting, representatives from the Member States were consulted via email in February 2018 to complete the overview and description of measures[2].

Starting from the overview of measures collected, the implementation status of the EED Article 17 and related articles is summarised at both EU level and Member State level in Table 1. The summary of the implementation status indicates that the average availability of information[3] to describe the adopted measures is ranging from medium (3) to high (5).

The number of information and training measures submitted in the NEEAPs 2017 (and 2014, if needed), varies significantly among Member States, from six measures in the Czech Republic to 93 information and training measures in Belgium. If a National Energy Efficiency Action Plan consists of several, separate regional plans, the number of measures evidently increases.
The starting year for implementation of measures ranges from 2008 to 2016, with the mathematical average for all Member States being 2013. This reflects the recent to very recent period of implementation of measures in half of the Member States.

The main market actors that are targeted by Member States with information and training measures are the final customers, principally the general public and to some lesser extent enterprises, as well as the building professionals, ranging from builders to auditors. Small and medium-sized enterprises are quite frequently in the scope of the initiatives. Although Article 17 aims also at explicitly ensuring provision of information towards financial institutions, Member States put very low attention to this target group (only nine Member States).

[1] The complete list of indicators used for the description of each information and training measure adopted by the Member States, is included in Annex A.

[2] The response rate of this email consultation in February 2018 was 18 out of 28 Member States.

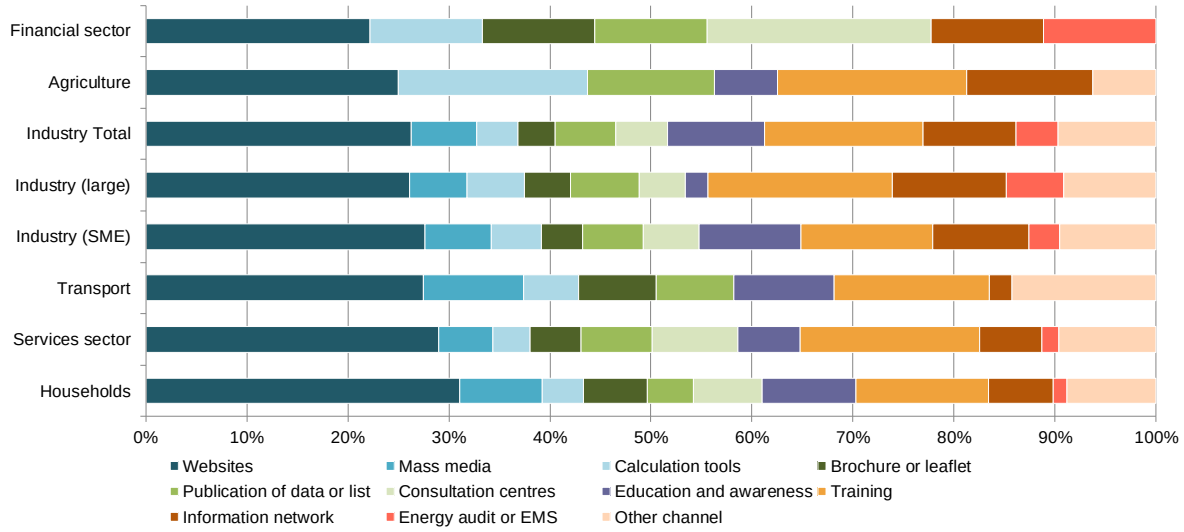
[3] Average availability of indicators per Member State summarises the availability of information to describe the measures of a Member State by means of the indicators as listed in Annex A. The average availability gives an indication of the completeness of the collected evidence from the NEEAPs and feedback received from the Member States.

Two types of measures are predominantly submitted in the NEEAPs, information provision and awareness raising. Training measures are less reported or even missing in some Member States; this certainly holds true for training initiatives related to the inspection of heating and cooling installations (Article 17 of EPBD).
Looking closer to which type of measure addresses which type of market actor, the status indicates that information is provided towards all types of market actors. On the other hand, awareness raising campaigns tend to be more focused on final customers, utility companies and other actors (e.g. local authorities). Building professionals tend to be targeted more by information provision and (specific) training measures.

The information and training measures as reported in the NEEAPs are mainly aimed at energy efficiency improvements in residential and tertiary buildings. By contrast, the transport sector and the agricultural sector are only targeted to a limited extent.

Member States use a variety of channels or means to target each of the end-use sectors. The most preferred dissemination channels are websites, training and other means (such as events and demonstration projects). Figure 1 provides an overview of the dissemination channel for each targeted sector at the EU-28 level[4].

Figure 1. Cross-table of targeted sectors per type of channel or mean used for the dissemination of information and training measures in the EU-28



Monitoring of results and ex-post (or ex-ante) evaluations are described in the NEEAPs for a limited number of measures. The described monitoring ranges from more simple methods (e.g. number of participants or trainees) to more complex methods (e.g. individual energy consumption metering to keep track of the performance of buildings). Moreover, umbrella policy programmes or plans are mentioned to a limited extent in the NEEAPs (e.g. Dutch and Danish Energy Agreement or the National Development Plan in Estonia). These broader programmes or plans can determine the overall framework of the information and training measures, as well as synergies and complementary effects with other policy measures (such as tax rebates, voluntary agreements or other information/training measures).

[4] A more detailed description of the implementation status in the EU-28 Member States can be found in Annex B.

Table 1. Summary of the implementation status in the EU-28 Member States, based on submitted NEEAPs and Member States feedback

	Average availability of indicators (%ranges) (*)	Total number of measures		Average start year (***)	Top-3 Type of channels/means			Distribution of targeted sectors (%ranges) (*)			Distribution of targeted market actors (%ranges) (*)		
		Art 17	Other Art (**)					Households	Services sector	Industry	Final customers	Building professionals	Financial institutions
Austria	4	6	2	2008	Websites	Consultation centres	Information network	4	4	4	3	4	
Belgium (3 regions)	4	59	34	2014	Websites	Consultation centres	Training	4	3	1	4	2	1
Bulgaria	4	11	4	2013	Websites	Education and awareness	Training	4	2	1	3	1	
Croatia	5	5	8	2015	Websites	Education and awareness	Training	4	4	2	3	3	
Cyprus	5	24	11	2014	Training	Other channel		4	3	3	4	2	1
Czech Republic	5	5	1	2016	Consultation centres	Education and awareness		5	5	5	5	3	
Denmark	5	19	-	2014	Websites	Publication of data or list		4	3	2	5	2	1
Estonia	4	8	1	2014	Websites	Education and awareness	Energy audit or EMS	4		2	5	1	
Finland	5	16	11	2010	Websites	Training	Other channel	3	3	2	3	3	
France	4	34	5	2011	Websites	Training		2	2	1	3	1	
Germany	4	4	4	2015	Websites	Mass media	Information network	4	3	3	2	3	
Greece	5	13	5	2011	Websites	Mass media	Other channel	5	1	1	4	1	
Hungary	4	5	3	2015	Websites	Energy audit or EMS	Other channel	3	4	4	2	4	
Ireland	5	11	13	2011	Websites	Training	Other channel	2	3	3	3	2	1
Italy	5	7	1	2016	Websites	Mass media	Training	4	4	4	5	1	1
Latvia	5	9	2	2010	Websites	Consultation centres		5	2	1	4	3	
Lithuania	4	12	-	2008	Websites	Other channel		3	1	1	5	1	
Luxembourg	4	6	13	2013	Websites	Training	Other channel	5	3	1	2	3	
Malta	5	15	1	2013	Education and awareness	Energy audit or EMS	Other channel	4	4	3	4	2	1
Netherlands	4	16	10	2013	Websites	Energy audit or EMS		4	4	2	5	1	1
Poland	5	5	3	2012	Mass media	Brochure or leaflet	Training	5	2	2	4	2	
Portugal	5	9	-	2008	Websites	Education and awareness		3	3		5	1	
Romania	3	18	3	2015	Websites	Training		2	2	3	2	3	1
Slovakia	4	25	2	2011	Publication of data or list	Consultation centres	Training	2	3	1	4	1	
Slovenia	4	8	2	2014	Education and awareness	Training		4	3	1	3	2	
Spain	4	22	-	2013	Websites	Mass media	Publication of data or list	4	3	1	5	1	
Sweden	5	7	6	2014	Websites	Training		4	4	3	4	3	1
United Kingdom	3	22	10	2012	Education and awareness	Energy audit or EMS	Other channel	2	2	3	3	1	
EU-28	4	**401**	**155**	**2013**	**Websites**	**Training**	**Other channel**	3	3	2	4	2	1

Legend:

*: Shares of targeted sectors & market actors are indicated by ranges from 1 (grey) to 5 (darkest blue); same holds true for the average availability of indicators.
Range 1 =]0%-20%]; 2 =]20%-40%]; 3 =]40%-60%]; 4 =]60%-80%]; 5 =]80% - 100%]

**: Other Art. = Article 8, 12, 16, 19 of EED and Article 17 & 20 of EPBD

***: Start year: recent start years > 2013 are highlighted in blue.

CHAPTER 3 EFFECTIVENESS OF MEASURES TO ENSURE WIDE DISSEMINATION OF INFORMATION ON ENERGY EFFICIENCY

Main conclusions

For the ten selected Member States reviewed for this study, the success factors of effective dissemination policy design and implementation are only identified to a limited extent. The findings are mostly based on literature (incl. NEEAPs) and supporting example campaign and project cases from the selected cases. Despite the lack of robust evidence, this observation suggests that Member States are not fully aware of the importance of the following five success factors to ensure wide dissemination of information on energy efficiency:

- Identification of clear policy objectives on the short and long term, preferably part of a strategic plan;
- An implementing entity having a clear mandate, responsibility and adequate resources;
- Integration of the information and training measures in a package of mutually reinforcing policy instruments, as well as being part of a broader policy plan or programme. In contrast to the other success factors, in half of the selected Member States an overarching programme or plan is reported that bundles a diverse package of energy related policy measures;
- Involvement of relevant stakeholders from all levels during the design and implementation, such as municipalities, building professionals, financial institutions, utility companies;
- An in-depth analysis of main barriers and enablers to identify the specific needs and background of market actors to allow customised information provision via appropriate communication channels or training's formats. Member States consider the available budget as an important criterium to decide on the communication channel or on the format of training, besides the objectives of the policy measures and the identified needs of the target groups.

The tangible results or outputs of information campaigns and training are for the most part monitored within the Member States by means of basic performance indicators, such as the number of participants and the number of website visits. On the other hand, monitoring campaigns estimating the reach of the measure, the recall as well as the raise of the measure's awareness level by the target audience are less common practice in the selected cases. In addition to a limited availability of ex-post (or ex-ante) evaluations, this does not allow quantification of the actual uptake in energy efficiency improvements and hampers Member States to properly adjust the design and/or implementation process of the measures to realize the desired outputs and effects. Moreover, the available budget, administrative barriers (legislative and regulatory issues) and political elections are indicated as barriers during the implementation of information and training measures within the selected Member States.

The implementation status in previous chapter shows that a variety of information and training measures, which target mainly final customers and building professionals, are adopted in the Member States in the frame of the Energy Efficiency Directive. This chapter summarises the assessment of the effectiveness to ensure wide dissemination of information and training measures to the market actors and citizens. The assessment is performed for a representative sample of ten Member States or cases, for which the analysis is starting from a triangulation of collected evidence.

3.1. METHODOLOGY TO ASSESS THE EFFECTIVENESS IN TEN SELECTED MEMBER STATES

The EEA policy evaluation framework (EEA, 2016)[5] defines the assessment of effectiveness as analysing to what extent a public intervention causes the observed effects and changes and to what extent the observed effects correspond to the objectives. Hereto, the following elements are part of the assessment:

[5] https://www.eea.europa.eu/publications/environment-and-climate-policy-evaluation

- INPUTS — the resources dedicated to the design and implementation of a measure (e.g. staff, strategic plan, training, etc.);
- OUTPUTS — the tangible results of a measure (e.g. the number of training courses or auditors, the number of campaign views, etc.);
- EFFECTS - the ultimate effect of changes in behaviour on the environment and society (e.g. changes in the level of energy efficiency awareness, energy savings, employment, etc.).

As such, the effectiveness assessment is not solely focused on the final impacts or effects (e.g. realized energy savings), but also on how to improve the implementation process of the measure (Harmelink et al., 2008; UKERC, 2015). As robust monitoring results and ex-post evaluations are often lacking in the case of information provision, awareness raising and training measures, the latter comprises more of a qualitative assessment (UKERC, 2015; BigEE, 2013). The interlinkages between the above elements, as well as other influencing elements, such as external factors and other policies, that can interact with the measures, i.e. support or weaken the effects, are illustrated in Figure 2.

To analyse to what extent information measures and training initiatives have contributed to the uptake of energy efficiency measures, evidence is collected for ten selected Member States following the intervention logic of inputs/outputs/effects of effective policy design, implementation and monitoring. The ten Member States selected for the effectiveness assessment are shown in Figure 3, namely Belgium, Cyprus, Denmark, Estonia, Finland, Italy, Lithuania, the Netherlands, Slovakia and Spain. This selection of Member States aims for a heterogeneous, representative sample of cases, so the findings of this analysis can provide a good indication for the assessment of the situation in the EU-28 as a whole.

Triangulation of evidence is applied to maximize the robustness of the results. Hereto, the following three primary sources of information are used, as illustrated in Figure 4[6]:

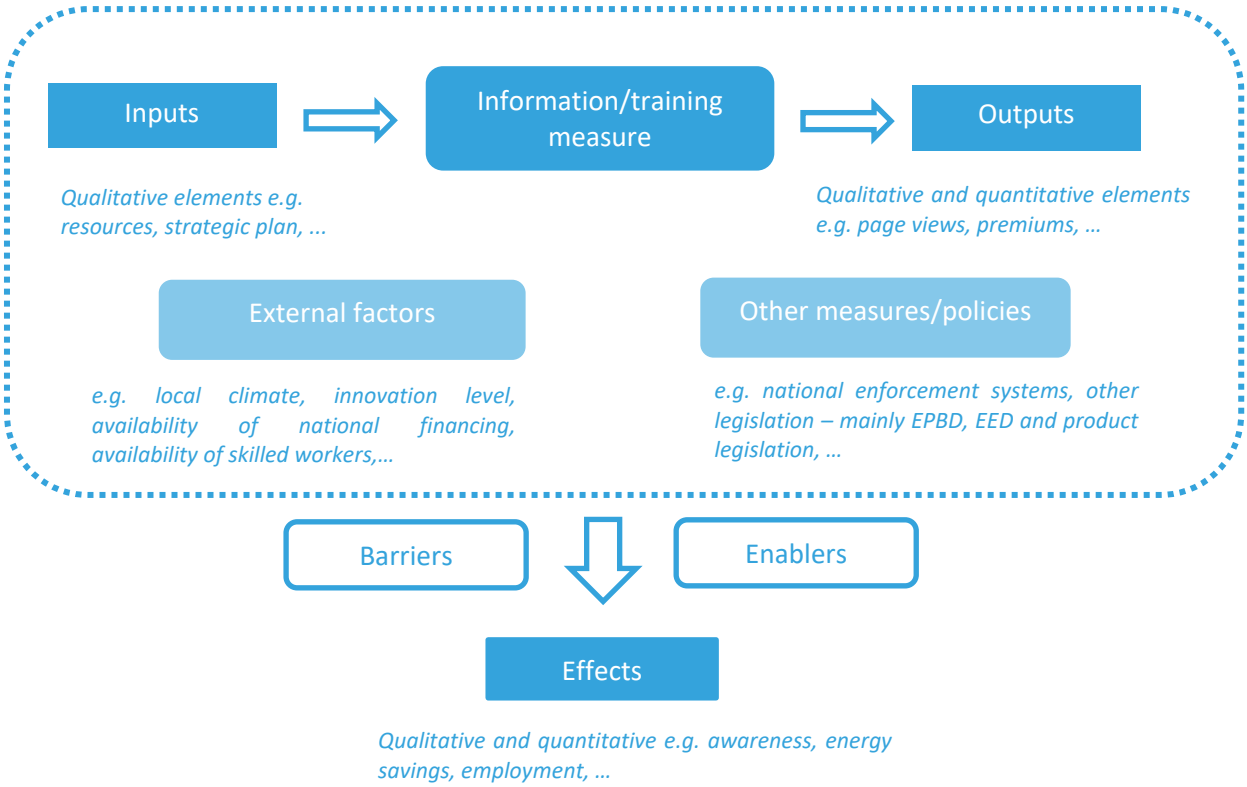
- Evidence from Member States' representatives, starting from the compiled overview of measures (cf. CHAPTER 2 - submitted NEEAPs and Member States e-mail consultation) complemented with in-depth, tailored telephone interviews[7]. The objective of the interviews is to better understand the actual context and the policy makers' views on the effectiveness of the information and training measures within their Member State;
- Evidence from market actors[8] via an online survey: market actors are inquired about their experiences and opinions related to the overall dissemination level, transparency, relevance and effectiveness of the measures implemented within their country. In total, 727 stakeholders were invited to the online survey representing all types of market actors in the selected cases, as well as at the EU level. The survey was launched on 09/03/2018 and ended two months later on 09/05/2018 (incl. two reminders). The total response rate was low for type of each market actor and each selected country with 54 survey responses in total, of which 36 fully completed;

[6] For each of the selected Member States, Annex C gives an overview of the evidence collected from Member States' representatives and literature for the specific policy measures or programmes/plans of the Member States. A distinction is made between information and training measures.

[7] Three Member States participated in the telephone interview (Spain, Cyprus and the Netherlands) out of the ten selected cases.

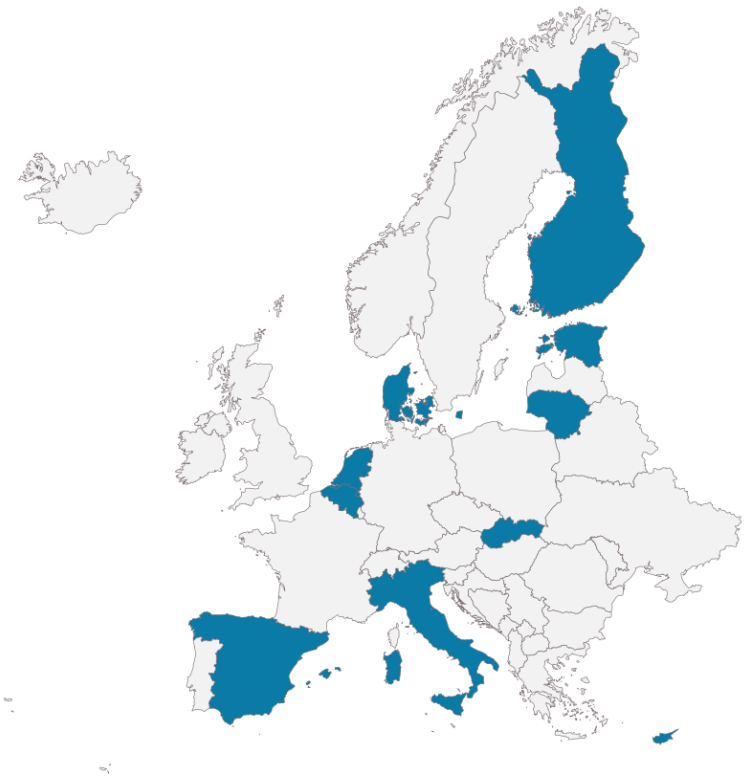
[8] The relevant market actors targeted by Article 17 of the EED are: building professionals, energy efficiency professionals active in industry, final customers or end users, housing associations, utility companies, training and educational institutions, local and regional authorities, financial institutions.

Figure 2. Intervention logic: elements to assess the effectiveness of information & training measures in the field of energy efficiency



Modified from (EEA, 2016) and (COM, 2016)

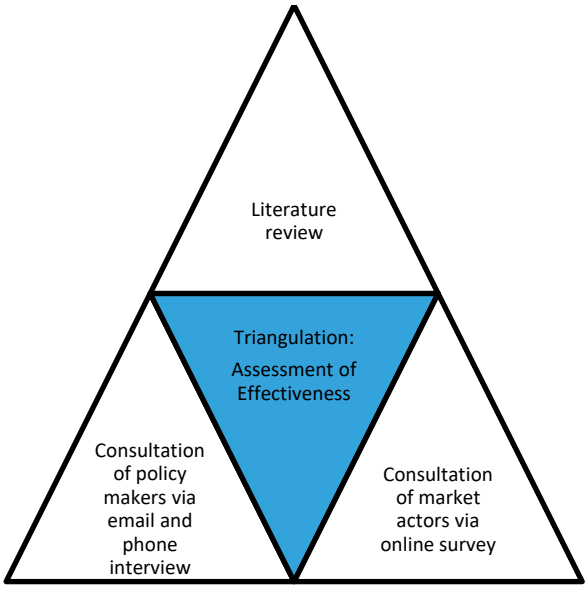
Figure 3. Geographical location of the ten selected Member States for the effectiveness assessment



- Evidence from literature about the effectiveness of information and training measures: available literature in the scope of Article 17, on EU-level as well as on individual Member State level, is consulted. Moreover, studies or documents suggested by Member States' representatives during the consultation related to monitoring of campaigns or evaluations are considered.

Given the limited response rate of market actors and the in-depth interviews of policy makers, the assessment almost completely relies on evidence from literature and the compiled overview of measures. As indicated above, the general lack of robust and comparable monitoring results and ex-post (or ex-ante) evaluations hampers an in-depth analysis of inputs, outputs and effects. As a consequence, it was not possible to triangulate the evidence from literature and NEEAPs for each element of the intervention logic and for each of the selected Member States. These limitations result in a restricted list of conclusions about the actual effectiveness of the measures implemented in context of Article 17.

Figure 4. Assessment of effectiveness for the ten selected cases: triangulation of evidence



3.2. ASSESSMENT OF EFFECTIVENESS TO ENSURE WIDE DISSEMINATION OF INFORMATION ON ENERGY EFFICIENCY

The effectiveness assessment of the information and training measures implemented in the ten cases is not solely focusing on impacts or effects, but also analyses the broader policy implementation process. Therefore, findings of the effectiveness assessment are presented for each element of the intervention logic, namely inputs, outputs and effects (see Figure 2). Moreover, good practices from the selected cases illustrate how to effectively design, implement or monitor the policy measures within the Member States.

3.2.1. INPUTS

In literature, several success factors during the process of design and implementation of policy measures, are noted as important to improve the effectiveness. The following paragraphs describe the findings and good practices for five ingredients of successful or effective policy design and implementation of the information & training measures.

→ **Existence of clear policy objectives on the short and long term**

In general, information provision and raising awareness measures are addressing the lack of knowledge among investors and final customers about energy-efficient improvements and technologies and their energy saving potential (BigEE, 2013), so target groups can take this knowledge into account in their investment decision and/or habitual behaviour or practices (Rosenow et al., 2016). Moreover, training and educational measures aim to provide professionals and policy makers knowledge on designing, constructing, operating, monitoring and assessing low energy technologies as well as on the related policy framework and the market. This way, policy makers and professionals can provide adequate and targeted information to investors and final customers (BigEE, 2013).
The collection of evidence in the selected cases results in very few measures containing clear defined policy objectives: only in three Member States (Finland, Italy and Lithuania), one or two measures refer to objectives or strategies as part of their policy design. This observation indicates a limited level of publication by the selected Member States about the design of a strategic plan or policy objectives. Together with the low availability of robust monitoring results and evaluations of information and training measures, the role of transparent long and short term objectives in policy design seems to be limited within the Member States.

Good practices of having clear objectives are identified for Italy where recent awareness raising measures have been put in place as part of a dissemination programme "Italia in Classe A" (2016) - a three-year information and training programme coordinated by the Italian National Agency for new technologies, energy and sustainable economic development (ENEA) - which is divided into three different stages of implementation, each having clear defined strategies based on an in-depth analysis of the economic, social and regulatory context. This in-depth analysis considered the main issues that could hamper the implementation of energy efficiency policies and that could be tackled through appropriate and targeted communication. The Lithuanian information and training measures linked to the Programme "Renovation (modernisation) of multi-apartment blocks in Lithuania" are set-up with clear, quantitative objectives in mind. The policy objectives related to awareness raising are to ensure that the public is better informed, better educated and more aware of issues related to building energy performance, renovation/modernisation and energy savings. By 2020, the residents' awareness should be improved by 90% compared to 2014 and the number of people intending to get involved in the Programme or to implement energy saving measures independently should increase by 60%. In 2016, to realize these objectives 682 measures were implemented.

→ **Clear mandate for the implementing entity**

According to Harmelink et al. (2008), there is a strong indication that an organisation or programme with a clear mandate, responsibility, and adequate resources is a foremost prerequisite for success. This implementing entity should be able to communicate with all stakeholders and should have the mandate to adjust the policy measure(s) e.g. based on monitoring results.
As in no more than half of the selected cases (Estonia, Finland, Lithuania and Slovakia) a responsible implementing entity can be identified, the analysis suggests that Member States aren't likely valuing the importance of a clear mandate for an implementing entity to realize effective dissemination of information within their country.

In Finland, awareness raising, information provision and training programmes are usually managed by Motiva, a company acting on behalf of the Finnish government and managing most of their communication projects. Motiva's services support the central government in Finland with the

implementation of the National Energy and Climate Strategy and EU Directives. Services are offered to local governments, businesses, non-governmental organisations and consumers. In addition, it manages a network of consultancy organisations in the regions, providing targeted advice to households and companies. Another important task of Motiva is monitoring the progress of measures and assessing their impacts. The Energy Authority has commissioned an annual work programme from Motiva, primarily linked to promotion of energy efficiency (about EUR 2,7 million in 2017). Other energy efficiency work undertaken by Motiva in 2016 on commission from the central government amounted to approximately EUR 1,6 million. Motiva employed 64 people at the end of 2016.

The Slovak Innovation and Energy Agency SIEA, a professional state subsidy organisation, contributes to the achievement of governmental energy policy objectives, principally by promoting energy efficiency, new energy technologies and renewables. The agency works closely with the central state authorities, the Union of Towns and Cities of Slovakia and the Towns and Municipalities Association. SIEA publishes free advice on its website[9], issues publications, organises seminars and conferences, operates a free telephone helpline and provides consultancy on energy efficiency at its four branches for all target groups. All these activities are part of the national project 'Living with Energy'.

→ **The ability to adapt to and integrate adjacent policies or develop consistent policy packages**

Information and training measures become more effective in combination with other policy instruments, especially, regulation, such as minimum energy performance standards, building energy labels or certificates and financial/fiscal instruments (BigEE, 2013). Moreover, information and training measures have a reinforcing impact on all other policy instruments because they influence decision-making in a different way, using psychological or behavioural economics mechanisms (Rosenow et al., 2016; BigEE, 2013). In addition, synergies between policy measures as well as the avoidance of duplicate efforts can result from consistent policy packages. For instance, participants of the CA EPBD (2016) indicate that Member States should explore national provisions that ensure the reliability of EPC experts and are aligned with similar EED provisions for energy auditors, since for both processes the legal basis, methodology and the required level of education of experts/auditors are identical.

Therefore, to improve the effectiveness of energy efficiency related measures, information and training measures are preferably part of a broader plan or programme and integrated in a package of mutually reinforcing policy instruments (Harmelink et al., 2008). The evidence collected indicates that in half of the selected Member States a broader programme or plan is described. These plans or programmes bundle a diverse package of energy related policy instruments, among which information provision and awareness raising.

The Dutch Energy Agreement for Sustainable Growth was concluded in 2013 by the Dutch Government with more than 33 parties represented by the Social and Economic Council of the Netherlands SER, consisting of industry, employers' associations, NGOs, trade unions, regional governments, housing associations, etc. To achieve significant energy savings in the built environment, the Agreement aims at stimulating cooperation between individuals and businesses through a combination of different types of instruments, such as information provision, awareness raising, reducing the burden and funding support. The information and training measures in the NEEAP of 2017 are part of the implementation of the Energy Agreement.

The Estonian information and training measures in the housing sector were part of the "National Development Plan for Estonian Housing Sector 2008–2013". One of the main objectives of this plan was to improve the quality and sustainability of the housing stock. The measures for reaching this

[9] http://www.siea.sk/

goal included e.g. financial support for refurbishment of apartment buildings, standard design documentation for refurbishment, awareness raising campaigns and training for better maintenance and refurbishment of buildings. Besides this housing related Plan, the general goal of Estonia's energy policy towards 2030 is described in the "National energy development plan 2030+ ENMAK", which was approved in October 2016. In elaborating the new energy development plan, various policy scenarios have been assessed, including scenarios that would influence changes in energy efficiency awareness and know-how by implementing measures, such as relevant information/training or awareness raising activities.

→ **Involvement of stakeholders**

The involvement of stakeholders in the design and implementation of policy measures and strategies serves the dual purpose of increasing the acceptance and, at the same time, improving the effectiveness by ensuring that stakeholders' needs and preferences are considered throughout the process (Harmelink et al., 2008).
The level of reporting by the ten selected Member States about the involvement of stakeholders during the design and implementation of information and training measures is very limited: only four measures in two Member States (Denmark and Finland) refer clearly to the important role of stakeholders. This low availability of evidence suggests that Member States may not be fully aware of the positive effects of involving relevant stakeholders.

The Finnish experience to increase energy efficiency awareness confirms the importance of stakeholder cooperation at all levels (i.e. municipalities, energy companies, government & ministries, NGO's and practitioners) during the strategy development and implementation. It is even more interesting when joint projects between companies and governmental organisations arise, as illustrated by the Better Home initiative in Denmark. The Danish Bedre Bolig Scheme (Better Home) was launched in the autumn of 2014 by the Danish Energy Agency as part of the Danish Government's Growth plan. It is one of the 21 initiatives in the Danish Strategy for energy Renovation of buildings. The Energy Renovation Strategy resulted from the Danish Energy Agreement of 2012 and engages more than 40 organisations from the following sectors: buildings, energy utilities and supply, financing institutions as well as universities. The Better Home initiative is a home-owner-driven renovation model. The model aims at making the supply side more service oriented and at raising the awareness at the demand side by giving expert advice throughout the energy renovation process (one-stop shop). What makes it unique is that Better Home is industry-driven i.e. the industry supports and invests in this initiative that started in Denmark, but in the meantime, has also been rolled out in Sweden. Better Home has a network of 3.500 installers, working closely together with the top-five banks in Denmark and four utility companies.

→ **Design according to the needs and background of specific actor groups**

Policy design tailored to specific target groups

When the provided information and training is tailored to the customer types within the target groups, the effectiveness of information and training measures will improve (BigEE, 2013; Harmelink et al., 2008; JRC, 2016). The need for tailored information and training measures is illustrated by Delmas et al. (2013): the research team showed that energy audits and consultation i.e. when individuals are informed about their own energy use and given advice on how to lower their consumption, were the most effective compared to other information strategies. Another example

can be found in JRC (2016) indicating that campaigns using mass communication in combination with personal influence are more effective than campaigns using mass communication only.

In the selected cases, 9 measures in four Member States (Belgium, Denmark, Finland and Italy) are identified where firstly, Member States try to record the needs of the target groups and secondly, address these needs by different policy measures among which information provision and training. In more than half of the selected cases the recording of specific needs is not published in literature nor in the submitted NEEAPs. Based on these findings, it appears that the effectiveness of campaigns and training within the Member States can be further improved by performing an in-depth analysis of the target audience about the main barriers and enablers to take up energy efficiency investments. In a next step, these barriers and enablers should be addressed through appropriate communication.

In Belgium, several surveys were organised to gain a good understanding of the barriers and enablers of Belgian end users and to get a view on the awareness and knowledge of the households and SMEs targeted by different policy instruments. For instance, since 2011, the Flemish Energy Agency organises each year a phone interview with more than 1.000 energy managers in Flanders. The focus group are companies with five to 200 employees. Via these phone interviews, the Flemish Energy Agency aims to assess the knowledge of the financial instruments in place, such as subsidies, fiscal instruments or certificate schemes for RES and CHP. Another phone survey in 2007, in frame of the Flemish Energy Renovation Programme 2020, helped to identify and to better understand the target groups of energy renovation measures. The EU-funded STEEEP project – Support and Training for an Excellent Energy Efficiency Performance – illustrates the importance of providing individual and tailored training and workshops to SMEs according to their maturity and available resources. The aim of this project was to reduce SMEs' energy consumption in ten participating countries (e.g. Estonia, Belgium, Italy and Spain) via the development of training and guidance on effective energy management tools. Another example of the effectiveness of customised approaches are the Flemish Energy Scans in SMEs. Commissioned by the Flemish Agency for Innovation and Entrepreneurship five consultancy firms carried out 400 energy audits in small and medium sized companies in Flanders. A total of 1.949 quantified recommendations were drafted. A subsequent survey showed that approximately half of the proposed measures was implemented.

Needs of target groups determine the choice of communication channel and training's format

Member States consider the available budget as an important criterium to decide on the communication channel as well as on the format of training. On average, identified budgets of communication campaigns range from 240.000€/year to 450.000€/year, apart from Spain introducing large communication campaigns of about 4.000.000€/year. The results of the LED campaign in the Danish retail sector show that social media can be a cost-effective way of getting the campaign message to the target group (budget in 2016 amounted to 241.200€). To increase the attendance rate of training and to manage the costs at the same time, web-based training can be an interesting alternative, as confirmed by Dutch experience. Participant fees for training of about 500 to 800 €/year are identified in some cases.

Besides budget, the objectives of the policy measures as well as the needs of the target groups determine the choice of the communication channel and the training's format. Awareness raising campaigns towards the general public often rely on a mixture of different types of mass media, such as TV, radio, newspapers, leaflets, presence at big fairs & events, magazines, websites and – of increasing importance – social media. Monitoring surveys of these mass media campaigns show higher exposure intensity and durability, such as illustrated by the Spanish communication campaigns of 2014 (Controlas tu Energía) and 2015 (Energy Saving and Efficiency 2015). On the other

hand, the Dutch awareness raising campaign "Save energy now" ("Energie besparen doe je nu") did not result in significant changes in the long-term behaviour, nevertheless the high reach of the campaign (79% of target group in 2017) was attributable to the use of TV as a communication channel. The Dutch campaign is a recurring campaign that runs during a short period of time but repeatedly over several years. This recurrence during the most relevant seasons (e.g. heating & cooling season, warning drivers to prepare for winter season) is considered by Member States as a good practice to increase the success of awareness raising campaigns.
A public survey in Belgium (Federal Government, 2017) about climate change and the willingness to act indicates that the most preferred sources of information (passive) are informative programmes, documentaries or fiction on TV (49%), websites (47%) and newspapers (33%). On the other hand, for the active search for information, websites are the most-preferred (67%). Striking is the emergence of social media as source of information (21% in 2017 compared to 9% in 2013).
Concerning the format of training, the target group mostly prefers specialized modules, customised training and – if relevant – a combination of theoretical and practical training with preferably an active involvement of industry (e.g. manufacturers of building materials). The evaluations of two projects confirm this finding, the "Flemish nearly zero energy building training (2017)" for construction contractors and the WE-Qualify project "Improve Skills and Qualifications in the Building Workforce in Cyprus", part of the European initiative "Build Up Skills".

To reach businesses such as the commercial sector or SMEs, a Cyprus assessment of past awareness raising activities (2017) shows that communication should not be steered by the government only. Often, stakeholders such as federations or associations of businesses and industries and the Chambers of Commerce are, through their networks, effective communication channels. This stresses the importance of stakeholder involvement in the design and implementation of measures.

3.2.2. OUTPUTS

Outputs in this context are the tangible results of information and training measures, such as the number of participants to the training or the number of campaign views. Monitoring can give insights in how to adjust the design and/or the implementation process of the measure to realize the desired outputs. The assessment indicates that most of the measures implemented by the selected Member States to ensure wide dissemination of information are monitored by means of basic performance indicators. On the other hand, adjustments to Member States' policy programmes are often hampered because broader monitoring campaigns to estimate the reach, recall as well as the raise of the measure's awareness level are less common practice in the selected cases.

The Spanish series of communication campaigns in 2014, 2015 and 2017, targeting the general public and focusing on energy efficiency in different everyday settings (eco-driving, building improvements, energy labelling), are subject to regular monitoring. The communication campaign in 2014 (budget of approximately 4.000.000€) included for instance the printing and distribution of 13,5 million public information leaflets and TV advertising during a television programme with an audience of 2,2 million viewers. The impact of the 2014 campaign was measured via two surveys: the first survey, which comprised of 1.200 respondents, measured the conventional impact of the campaign by assessing spontaneous recall, prompted recall, campaign awareness, visibility/exposure, etc. The second survey measured the impact in terms of energy savings achieved via changes in consumer behaviour. The impact of the campaign in 2015 was measured again by a survey, having as outputs: percentage of the population remembering the campaign (per type of target group), percentage of those who remembered the campaign that also recalled the advice given as well as the percentage of those who remembered the campaign that affirmed that they would put the advice also into practice.

In 2009, the government in Flanders launched a large-scale roof insulation campaign "Is your house leaking money too? Do something about it, insulate your roof!" ("Lekt uw huis ook geld? Doe er iets aan, isoleer uw dak!") linked to the introduction of the Flemish roof insulation premium. To evaluate the campaign, more than 1.000 Flemish households were interviewed by telephone in March 2009. The survey looked at the spread of the campaign and how it was perceived by the households. Also, the impact of the campaign on future insulation behaviour of the Flemish households was assessed.

The available budget is indicated multiple times by the Member States as a barrier to reach the overall objectives or desired outputs of information and training measures. In addition, administrative barriers related to legislative and regulatory issues, as well as political elections can decelerate the implementation of measures.

3.2.3. EFFECTS

Literature often indicates that there is little quantification of the extent to which information provision, awareness raising and training measures have contributed to the actual uptake in energy efficiency improvements and to the actual energy savings. Also, the methods to assess the effects tend to be less robust than for other types of policy instruments, with small sample sizes and reliance on surveys with little reflection on the likely accuracy of the responses (UKERC, 2015; BigEE, 2013). The implementation status of Article 17 in the EU-28 confirms this finding, as only 8% of the measures reported by the Member States were subject to a more detailed ex-ante or ex-post policy evaluation. The in-depth collection of evidence (telephone interviews, online survey and literature review) in the ten selected cases resulted in 14 measures having a kind of quantification of effects on energy savings (mainly linked to Art. 7 notifications in NEEAPs) and/or CO_2-emission reductions (mainly linked to climate MMR reporting). It is often not clear how these quantified effects are measured or estimated. Moreover, these savings are expressed in different ways hampering a comparison between Member States' initiatives.

In Finland, the effects of the so-called soft energy efficiency measures taken in context of the Finnish Energy Services Action Plan towards Customers & Höyla II (i.e. voluntary energy efficiency agreement for businesses) are estimated in a transparent and more sound way, despite the level of uncertainty still linked to these estimated savings. The estimation is based on a 2011-2012 study conducted by the branch association Finnish Energy Industries and Motiva[10]: the estimated effect of soft measures is an energy saving of 2,5% of the energy consumption in households and of only 1% of the energy consumption in other sectors, such as services and industry. To estimate the total energy savings related to soft energy efficiency measures implemented by energy companies, following assumptions are made by Motiva, as described in the Finnish NEEAP2017:

- Total energy consumption for the different consumer groups in Finland;
- Coverage of the Action Plan for Energy Services of the total energy consumption (%) which is not overlapping other agreements and/or action plans;
- Share of energy sold and distributed by the participating companies in the Action Plan for Energy Services of Finland's total consumption (gathered via annual monitoring reporting in frame of the Energy Efficiency Agreements);
- Participating companies provide soft measures to their customers continuously, implying a lifetime of the savings of one year and every year there will be new savings made.

The resulting cumulative energy savings for end-use, as notified under Article 7 in the NEEAP2017, are 3.393 GWh_{cum} in 2014-2016 and 4.419 GWh_{cum} in 2017-2020 according to the above described assumptions.

[10] http://energia.fi/files/1225/Pehmeiden_energiatehokkuustoimien_vaikutusten_mittaus_ja_arviointi.pdf

CHAPTER 4 EFFECTIVENESS OF MEASURES TO PROVIDE INFORMATION TO FINANCIAL INSTITUTIONS AND BANKS

Main conclusions

The main conclusion is the significant lack of initiatives reported by the Member States which relate to the provision of information, awareness raising and training approaches for financial institutions and banks. Furthermore, the research team was able to identify in literature (incl. NEEAPs) limited attempts put in place by Member States to define performance indicators (outputs) or to systematically track the impact of a particular measure (effects). The mapping exercise of Member States' and EU initiatives across four key drivers related to information provision indicates:

- National promotion and support of European standardisation and benchmarking initiatives: although there are several large European initiatives in these areas - such as the Investor Confidence Project ICP and EEFIG De-risking Energy Efficiency Platform DEEP - there are no national initiatives identified in literature nor specific national actions supporting those EU initiatives;
- Monitoring, Reporting and Verification (MRV) of energy efficiency investment projects: although there are notable global initiatives aimed at standardising the MRV process (e.g. the Efficiency Valuation Organization's International Performance Measurement and Verification Protocol – EVO IPMVP), the adoption of this standardised approach is not sufficiently promoted and adopted at Member State level;
- Technical assistance & capacity building: technical assistance provided to financial institutions as part of EU initiatives (e.g. the Private Finance for Energy Efficiency PF4EE being delivered by the EIB) is rarely an integral part of Member State-led financial instruments across the ten countries examined. By contrast, at the EU and Member State level, initiatives are taken to support the capacity of financial institutions and banks to trigger the financing of energy efficiency investments (e.g. EU Sustainable Energy Investment Forums and the Dutch Green Deals).

Under the requirements of Article 17 of the Energy Efficiency Directive, "*Member States shall encourage the provision of information to banks and other financial institutions on possibilities of participating, including through the creation of public/private partnerships, in the financing of energy efficiency improvement measures*". This chapter gives insights into the types of measures or initiatives put in place in the Member States and at EU level to provide information on financing of energy efficiency improvement measures towards financial institutions and the effectiveness of these measures. The assessment is performed for a representative sample of ten Member States, for which the qualitative analysis starts from a triangulation of evidence.

4.1. METHODOLOGY TO ASSESS THE EFFECTIVENESS IN TEN SELECTED MEMBER STATES

The intervention logic of inputs, outputs and effects of effective policy design, implementation and monitoring, as described in previous CHAPTER 3.1, defines the methodological framework of the effectiveness assessment. Given the scarcity of monitoring campaigns and ex-post (and ex-ante) evaluations in the researched domain, there is very little quantifiable information available about the outputs and effects of the measures concerned. Consequently, the effectiveness assessment has to rely on a qualitative approach. The results of the assessment are presented below as a mapping exercise of initiatives across four key Energy Efficiency Financial Institutions Group (EEFIG) drivers related to information provision to financial institutions which affects the supply of energy efficiency investments.

According to this approach, evidence is collected in a representative sample of ten Member States, corresponding to the ten cases selected for the general effectiveness assessment[11]. Besides these selected cases, actions undertaken at EU level are part of the analysis as well. These include actions promoted by the EEFIG, the European Investment Advisory Hub (EIAH) and the more generally proposed actions in the Smart Finance for Smart Buildings Initiative as part of the Clean Energy Package[12]. To ensure sufficient depth of analysis, the same triangulation of evidence from three complementary sources is applied:

- Evidence from Member States' representatives: starting from the compiled overviews of measures, described in CHAPTER 2, complemented with in-depth, tailored telephone interviews. The objective of the interviews is to better understand the actual context and the policy makers' views on the effectiveness[13];
- Evidence from financial institutions via an online survey (March-May 2018) and telephone interviews (June 2018): out of 177 selected financial institutions, only four organisations took part in the online survey and two banks from the Netherlands in the in-depth telephone interviews. In addition, consultations were undertaken with a member of the EEFIG project team and the Investor Confidence Project ICP, as well as with a consultant providing technical assistance to the PF4EE initiative, to learn from their experiences obtained within these projects;
- Evidence from literature review: as it was difficult to engage with both public and private stakeholders, the assessment of the effectiveness is mainly based on evidence from literature, at EU- and Member State level. In addition, relevant studies or documents suggested by Member State representatives during the e-mail and/or telephone consultation are also considered.

Based on an in-depth literature review of the initiatives put in place in the ten selected Member States and at EU level, a list of measures is collected, described and organised under key drivers with the objective to identify key lessons learned in terms of effectiveness and replicability potential[14].

4.2. KEY DRIVERS RELATED TO INFORMATION PROVISION TO AFFECT SUPPLY OF ENERGY EFFICIENCY INVESTMENTS

The Energy Efficiency Financial Institution Group (EEFIG, 2015) identified 23 drivers affecting the supply of finance for energy efficiency investments. The four drivers connected to information provision towards financial institutions include: the need of financial institutions for standardisation; benchmarking to increase investor confidence; Monitoring Reporting & Verification (MRV) and technical assistance together with capacity building. Table 2 below provides an overview of the collected measures addressing these four drivers at EU level and in the selected cases.

Some initiatives aim to increase the demand for energy efficiency investments, and hereto, Member States work closely together with financial institutions to either collect private or commercial funding (co-financing) or to manage/facilitate public funding or soft loan schemes towards the financial beneficiaries. These latter financial instruments or schemes adopted by Member States are listed at the bottom of the table.

[11] The ten selected cases are Belgium, Cyprus, Denmark, Estonia, Finland, Italy, Lithuania, the Netherlands, Slovakia and Spain, corresponding to the Member States selected in CHAPTER 3.

[12] The Smart Finance for Smart Buildings initiative, as part of the 'Clean Energy for All Europeans' package, includes practical solutions to mobilise private financing for energy efficiency and renewable energy in buildings in three main areas, namely using public funds effectively, guiding projects through the financing process and thirdly changing risk perception of financiers and investors.

[13] Of the ten selected Member States three volunteered to be interviewed by telephone (Cyprus, Spain and the Netherlands).

[14] The detailed description of the identified initiatives towards financial institutions are given in Annex D.

Table 2. Collected measures or initiatives adopted at EU level and in the ten Member States to provide information towards financial institutions

Member State Level	EU level
Driver 1 - Standardisation	
	- Energy Efficient Mortgages Initiative H2020 - EEFIG Underwriting Toolkit - Investor Confidence Project ICP
Driver 2 - Benchmarking	
	- DEEP database - European Energy Efficient building district Database (Exceed)
Driver 3 - MRV	
	- Guidance for designing, implementing, financing and assessing the investments in the area of sustainable energy in buildings, including MRV
Driver 4 - Technical Assistance & Capacity Building	
- *Energy policy agreements with banks (BE) - *Information to promote low-interest loans (CY) - *Better Homes (Bedre Bolig) Scheme (DK) - Energy Efficiency Funding Survey (FI) - *Italia in Classe A (IT) - ABI Lab Survey "Role banking sector to support green technologies" (IT) - Energy Efficiency Award (IT) - *Green Deals Energy (NL) - *EscoNetwerk (NL)	- Private Finance for Energy Efficiency (PF4EE) Expert Support Facility - EEFIG National - Sustainable Energy Investment Forums (SEI Forums) - European Investment Advisory Hub (EIAH) - European Local ENergy Assistance (ELENA) facility - ManagEnergy
Increase of Demand via financial schemes in close collaboration with financial institutions	
- *KredEx Loan guarantees Buildings (EE) - *Plafond Casa Fund (soft loans buildings) (IT) - Public Investment Development Agency VIPA (LT) - *Revolving Fund for Energy Savings RFE (NL) - *Extending mortgage options for energy saving measures (NL) - *JESSICA - F.I.D.A.E Fund for EE and RES (ES) - ICO- IDAE energy efficiency 2017-2018 Fund (ES)	

Legend: * = initiatives reported by Member States in NEEAP 2017.

In general, independently of the type of driver, in the selected Member States the number of information measures targeting financial institutions and banks as reported in the NEEAPs is very limited. The implementation status, as described in CHAPTER 2, of the EU-28 Member States confirms this general lack of countries' initiatives. In addition, almost half of the collected measures are not specifically focussed on provision of information to financial institutions. Instead they rely on a strong collaboration with financial institutions for the implementation of financial stimuli. Therefore, these measures are – in a strict sense – not directly linked to Article 17 of the EED. Furthermore, there is a considerable lack of evidence in the NEEAPs, as well as in the available literature, on key required elements of the intervention logic, namely inputs, outputs and effects, which would have facilitated the effectiveness assessment. In very few cases, Member States defined performance indicators or systematically tracked the impact of a particular measure.

→ DRIVER 1: Standardisation: development of easy-to-use standards for all steps in the energy efficiency investment process

According to EEFIG (2015), the main goal of standardisation is to reduce transaction costs and thus incentivise more financial institutions to participate in energy efficiency programmes. Some of the important benefits of standardisation include the maximization of compatibility, repeatability and quality in procedures and documentation. Improving the replicability and scaling of formerly idiosyncratic processes is another outcome of standardisation. As far as financial institutions are concerned, standardisation can be applied in three main areas (EEFIG, 2015):

- First, technical standardisation involves the use of similar (or identical) measures, to simplify the assessment of investments by financial institutions;
- Second, standardised processes to prepare and carry out energy efficiency investments are pivotal to increase the reliability of energy saving cash flows and the ease of their measurement and verification;
- Third, standardisation of financial assets involves fitting a good number of contractual clauses related to financial assets in a similar framework. That helps with portfolio evaluation of risks and returns with respect to groups of projects.

Three key standardisation initiatives aiming to address the issues flagged above are identified, all adopted at EU level, namely:

- The Energy Efficient Mortgages[15] Initiative, which aims to create a standardised financial asset in the form of a "energy efficient mortgage";
- The EEFIG Underwriting Toolkit[16], which aims to set a common framework between developers, project owners and financial institutions and provides a mutual approach to understand and assess the risks and value of energy efficiency projects and investments; and,
- The Investor Confidence Project (ICP)[17], which is an international framework providing a standardised way – via a dedicated certificate - to assess the development, documentation and measuring of energy efficiency projects, as well as their risks and values.

These three initiatives, all launched in the last four years, offer a good framework to facilitate the involvement of European financial institutions in energy efficiency projects. On the other hand, they all face the challenge of dissemination beyond the first movers to engage more widely with a critical mass of financial institutions. Key lessons that can be learned from these initiatives include:

- The need to engage and get the strong buy-in of key market actors. This was for example the case with the Energy Efficient Mortgages Initiative, which is market-led and relies on cross-sectoral consultation to develop its protocol and information exchange portal;
- The need to engage with policy makers, which can send strong support signals towards specific standardisation initiatives. This approach was adopted for the dissemination of the Energy Efficient Mortgages Initiative in the Member States. As stated in (EEFIG, 2015), the financial community does not expect national governments to lead the actual work on standardisation; instead they mainly expect them to put in place a proper framework. This framework should also consider the need of financial institutions to acquire a proper level of knowledge, so they are able to adopt the standardisation initiatives;
- The necessity to engage with financial institutions at the right moment in their programming cycle in order to allow for the integration of new design elements, such as the Investor Ready Energy Efficiency™ Certification (IREE™) proposed by ICP.

[15] Energy Efficient Mortgages, http://eemap.energyefficientmortgages.eu/

[16] EEFIG Underwriting Toolkit, https://valueandrisk.eefig.eu/

[17] Investor Confidence Project (ICP), http://europe.eeperformance.org/

→ DRIVER 2: Benchmarking to increase investor confidence and changes in the risk perception of energy efficiency investments

Benchmarking and comparing the relative successes of energy efficiency investment programmes in various Member States can help ensure that standards and best practices are shared and replicated. The EEFIG (2015) identified at least five useful online benchmarking tools, which provide insights for prospective energy efficiency project hosts and investors: Energy Intensive Curve (EUR 330 million of mainly UK EE investments); Green Button (US database with energy use data for 60 million customers used for benchmarking in commercial and residential buildings sectors); IIP's Industrial Efficiency Technology Database (Global research and benchmarks for cement, iron, steel and pulp & paper sectors, plus electric motor driven systems); and, the US Department of Energy supported Industrial Assessment Centres Database (containing 16.700 assessments and over 120.000 recommendations).

A notable, European achievement is the creation of the energy efficiency performance database, De-risking Energy Efficiency Platform (DEEP)[18]. It is an open source pan-European database for energy efficiency investments performance monitoring, which allows benchmarking and interpretation of gathered data and investments risk/performance modelling. The database contains data from more than 10.000 implemented energy efficiency investments, in buildings and industry, contributed by more than 25 data providers. It aims to collect 200+ data points for each energy efficiency investment[19]. It covers all Member States, however there is an uneven distribution of data across Member States which suggests that greater investment in promotion and awareness of the database to a wider set of stakeholders is required in order to increase its use.
Alongside the DEEP database, the European Energy Efficient building district Database (ExcEED)[20] is identified as another relevant EU-level initiative to facilitate the access to energy efficiency data for financial institutions. The project develops key performance indicators (KPIs) to quantify and benchmark the energy efficiency and the environmental quality of last generation buildings and districts. The objective is to create a European database for measured and qualitative data on beyond the state-of-the-art buildings and districts.
The key lessons to be learned from these two initiatives adopted at EU level, include:

- Maintenance and continuous update of databases requires serious consideration: although the benchmarking databases might look appealing at first sight, they represent an important challenge in terms of maintenance and continuous update. Experience from the US shows that the use of information exchange platforms between practitioners and financiers might prove more adequate. This was the reasoning behind the development of the Building Energy Data Exchange Specification (BEDES[21]) project which aims to facilitate the exchange of information on building characteristics and energy use. Alternatively, developers of databases can identify ways to maintain the active involvement of stakeholders, as tested out by the ExcEED project, for example by continuously gathering new data through surveys and by connecting to major EU financed databases (e.g. EU Building Stock Observatory);
- It is crucial to facilitate access to real-life performance data, not just initial energy efficiency estimates, as is still often the case, since these are the data required by financial institutions to assess their risks and return on investment.

[18] De-risking Energy Efficiency Platform (DEEP), https://deep.eefig.eu/

[19] The DEEP database also includes investments for which less data is available, as long as a minimum core set of indicators is provided.

[20] Energy Efficient building district Database (ExcEED), http://www.exceedproject.eu/

[21] Building Energy Data Exchange Specification (BEDES), https://bedes.lbl.gov/

→ DRIVER 3: Monitoring, Reporting and Verification: availability of performance data and clear/transparent monitoring and measurement of savings against the baseline

Monitoring, reporting & verification (MRV) is a crucial driver of the energy efficiency investment supply, provided by financial institutions (EEFIG, 2015). This is due to the fact that energy efficiency investment flows can only be accessed if key decision makers are engaged with a clear business case. Consequently, strong MRV and quality assurance would go a long way towards helping increase financial institutions' confidence and understanding of investment risks. Proper MRV requires the resulting or attainable energy savings (versus baseline) of energy efficiency investment projects to be measured, reported on and verified in a standardised, clear, transparent and high-quality manner. In terms of needs, the financial institutions require policy support to market organisation and accreditation in support of high quality MRV standards, best practices and transparency (EEFIG, 2015).

Although MRV is considered as one of the key drivers, surprisingly there is almost no initiative directly targeting MRV at European as well as at national level (based on the ten selected Member States). Although there are notable global initiatives aimed at standardising the MRV process (e.g. the Efficiency Valuation Organisation's International Performance Measurement and Verification Protocol (EVO IPMVP) and international standards such as ISO 17743:2016[22] and ISO 17741:2016[23]), the adoption of this standardised approach seems to be lagging in Europe.

→ DRIVER 4: Technical assistance and capacity building: knowledge of energy efficiency technologies and necessary skills to assess energy efficiency investments

According to BPIE (2017) and EEFIG (2015) a key solution to overcome investment challenges is the improvement of technical assistance by setting up national project development groups to assist and assess the development of projects. Capacity building initiatives could also be created to focus on generating effective financing instruments and enhanced project development skills. In addition, capacity building can be deployed to raise the ability of financial institutions to advise clients on how to finance investments in energy efficiency measures, as well as to give financial institutions the confidence to assess risks and benefits of business cases. Technical assistance and capacity building are important aspects to increase the pipeline of energy efficiency investments: as energy efficiency investments are introduced to a particular sector, significant technical assistance and capacity building is needed to define and support ongoing investments. Thanks to the support, the energy efficiency investments will be identified and implemented over time in several projects as they become part of the regular business approach (EEFIG, 2015).

TECHNICAL ASSISTANCE can be provided at the programme level of financial instruments, with the objective to design, structure, launch and operate the financial instrument (EEFIG, 2015). This support may include the expertise needed for development of ex-ante analyses, the establishment of investment funds, operation and management skills, contractual design and marketing skills as well as understanding the scope of eligible energy efficiency investments.
An example of technical assistance at the programme level is the European financial instrument Private Finance for Energy Efficiency (PF4EE), which aims to address the limited access of commercial

[22] ISO 17743:2016: Energy savings – Definition of a methodological framework applicable to calculation and reporting on energy savings.
[23] ISO 17741:2016: General technical rules for measurement, calculation and verification of energy savings of projects.

financing for energy efficiency investments. The instrument works with financial intermediaries within the Member States and has an important component of training and capacity building, called PF4EE Expert Support Facility[24]. It has to date provided support to nine financial institutions across nine Member States. The Expert Support Facility helped financial institutions to process their first real-life energy efficiency financing projects, which proved to be the most effective way to learn about the topic[25]. Other EU initiatives providing technical assistance services are the European Investment Advisory Hub (EIAH)[26] giving tailor-made support for investors, project promoters and public managing authorities; and the European Local ENergy Assistance (ELENA)[27] providing grants for technical assistance on large investment projects led by local authorities.
Technical assistance provided to financial institutions is rarely an element of initiatives governed at the level of the selected ten Member States.

There are three measures, initiated at the EU level, introducing CAPACITY BUILDING TOWARDS FINANCIAL INSTITUTIONS AND BANKS. These initiatives stress the importance of sharing Member State practices in a structured or standardised way with public and private experts in the field:

- Sustainable Energy Investment Forums (SEI Forums)[28], which builds on the EEFIG work: the aim of the SEI Forums is to work with national stakeholders to boost large-scale investment and financing for sustainable energy. To engage financial institutions effectively, public events and national roundtables of public and private experts are organised, resulting in the basis for long-term cooperation and roadmaps for sustainable energy finance. The SEI Forums model has been proven successful in sharing initiatives put in place by the EU towards Member States, and it has allowed good practices being put in place by Member States to be shared, which might be a missing element in the current knowledge landscape;
- Energy Efficiency Financial Institutions Group (EEFIG) National[29]: following the success of EEFIG at EU level, initiatives were launched in five Member States to run standardised, national engagement processes with finance experts. The EEFIG National Toolkit[30] provides Member States with the necessary components to conduct and replicate the EEFIG National engagement process to their country.

In several Member States measures are implemented to improve the capacity of financial institutions and banks. The type of measures ranges from surveys to detect the actual information needs of the financial sector (Finland and Italy) to voluntary agreements (Energy Policy Agreements in Belgium and Green Deals in the Netherlands)[31]. The in-depth surveys among financial institutions (Italy) indicate that transparency and stability of the regulatory framework are perceived as issues hampering investments, besides the lack of financial and technical know-how in the energy efficiency field. The Danish Bedre Bolig scheme as well as the Dutch Green Deals aim to remove these barriers, so the technical and financial know-how of the financial advisers and potential financiers can be improved by means of training, sharing calculation templates to estimate savings as well as expert and networking sessions:

- As explained in CHAPTER 3, the Danish Bedre Bolig (Better Home) scheme was launched in autumn 2014 by the Danish Energy Agency to give expert advice throughout the energy

[24] PF4EE Expert Support Facility, http://www.eib.org/en/products/blending/pf4ee/index.htm
[25] Telephone interview (July 2018) with Adelphi, technical assistant consultants for PF4EE initiative
[26] European Investment Advisory Hub (EIAH), http://eiah.eib.org
[27] European Local Energy Assistance (ELENA), http://www.eib.org/en/products/advising/elena/index.htm
[28] SEI Forums, https://ec.europa.eu/energy/en/financing-energy-efficiency/sustainable-energy-investment-forums
[29] EEFIG National, http://www.eefig.com/index.php/eefig-local
[30] EEFIG National Toolkit, http://www.eefig.com/images/eefig_local/3.-EEFIG-National-Toolkit.pdf
[31] Other initiatives improving the capacity of financial institutions within the selected Member states are described in Annex D.

renovation process for homeowners (one-stop shop). Among other things, Bedre Bolig focuses on developing cooperation between homeowners and financial institutions, enabling financial advisers to better advise their customers on the financing of energy improvement projects. As a result, a calculation programme and a report format has been developed which gives the financial institutions a solid basis on which to assess the potential savings and to facilitate the dialogue between homeowner and bank. In the evaluation of the Bedre Bolig programme, financial institutions confirmed that they could provide better advice because of the training;

- Starting from 2011, the Dutch entered into voluntary agreements, the so-called Dutch Green Deals, with the society for energy, with the emphasis on energy efficiency and renewable energy. By entering a Green Deal on a voluntary basis, the Dutch government aims to facilitate and accelerate initiatives by removing barriers. This is achieved in numerous ways such as giving advice, bringing parties into contact with each other (networking) and removing obstacles in legislation and regulations. The financial sector has also signed Green Deals among which the "Green Deal expertisecentrum financiering duurzame energieprojecten (Expertise Centre Financing Sustainable Energy)" signed in 2013. The Expertise Centre shares technical and financial know-how by connecting initiators of energy projects, as well as potential financiers (by means of reports, presentations and expert sessions).

→ **Increase of Demand via financial schemes in close collaboration with financial institutions**

Besides the above four drivers of information provision, other identified enablers for investments include soft loans (i.e. debt from public bodies and public financial institutions at below market rates of interest and/or concessions on repayment terms) and co-financing (joint or parallel funding of debt and equity by private investors and commercial banks together with public bodies and public financial institutions at EU and/or Member State level). Soft loans and co-financing seem to be well-performing in the ten selected Member States, as there are several examples of such existing programmes where Member States work closely together with financial institutions and banks[32]. Close collaboration is also identified for other financial instruments such as loan guarantees, tax deductions and grants. As indicated above, these policy measures adopted by the Member States are in a strict sense not linked to Article 17, given the low level of information provision or technical assistance, but the strong cooperation between public and private bodies should improve the leverage of the public funding.

In Estonia, the KredEx Foundation, a government owned non-profit provider of financial services, offers loan guarantees for energy efficiency investments in residential buildings. KredEx has cooperated with local intermediary commercial banks (SEB and Swedbank) to manage the loans. The banks' main motivation to cooperate is to get access to more potential, private investors, as well as capitalising on their very good past experiences with financing energy refurbishment (reliable clients, no late payments or payment defaults). The Dutch Revolving Fund for Energy Savings (RFE) provides loans for energy saving measures in the built environment. In 2013, the Ministry of the Interior organised a tender to fund the establishment of the Revolving Fund for Energy Savings (RFE) with 25% public funding and 75% private funding. As a result, two banks, Rabobank and ASN Bank, did participate so the objective of 75% financial institution funding was achieved. The successful establishment of this revolving fund with private co-financing is explained by the organisation of the public tender process, the conditions for funding and the establishment of an independent organisation which provides the loans to the homeowners (Foundation National Energy Savings Fund).

[32] The description of financial instruments implemented in Member States in close collaboration with financial institutions are described in Annex D.

CHAPTER 5 RECOMMENDATIONS FOR FURTHER ACTION TO IMPROVE THE IMPLEMENTATION OF ARTICLE 17

This chapter proposes recommendations directed towards both Member States and the European Commission to further improve effective implementation of Article 17 of the Energy Efficiency Directive in the EU-28 Member States.

→ **Implementation Status of Article 17 in the EU-28 Member States**

Ensure wide dissemination of information on energy efficiency in the Member States

The implementation status of Article 17 shows a variety of information measures and awareness raising campaigns being adopted in all Member States to comply with the specific Article and related articles of the EED. These measures target mainly final customers and building professionals. In contrast to awareness raising and information provision, training measures are less reported in the NEEAPs and are mainly targeted at building professionals. Therefore, it is recommended that **MEMBER STATES** design and implement more training initiatives towards market actors from the industry and transport sectors, as well as towards financial institutions. In addition, Member States are recommended to improve the transparency on the implementation of training initiatives related to inspection of heating and cooling installations (Article 17 of the EPBD), given the lack of current reporting in the NEEAPs.
The scope of the adopted measures in the EU-28 Member States mainly focuses on the building sector whereas the transport sector is only included to a limited extent. Member States could therefore increase the awareness level and knowledge of the general public and professionals about sustainable mobility by introducing awareness raising campaigns (e.g. promotion of public transport and car sharing) and training (e.g. eco-driving) addressed to end-users and/or professional drivers.

Information provision to financial institutions affecting the supply of finance for energy efficiency investments

Despite the obligations under the EED, Member States have placed very little emphasis on financial institutions in their submitted NEEAPs. By contrast, a number of initiatives aimed at financial institutions are already successfully running at EU level, and are recommended to be promoted, adopted or further supported by individual **MEMBER STATES**. Information measures implemented by Member States can be of considerable added value, since they can address specific barriers or enablers related to the financial, legal and technical framework of energy efficiency investments. Therefore, Member States are promoted to map the specific needs of financial institutions by means of an in-depth survey or by bringing together initiators of energy projects (demand) and potential financiers (supply). This way, Member States could gain a better understanding of outstanding information and knowledge requirements, as well as opportunities and barriers in the process of financing energy efficiency. In a next step, it is recommended to address these needs, barriers and opportunities by promoting or implementing following drivers of information provision:

1. *National promotion and support of European standardisation and benchmarking initiatives:* Member States are recommended to send strong support signals towards their financial institutions around the value of engaging with current EU standardisation and benchmarking initiatives, such as EEFIG Underwriting toolkit and DEEP database. It is important to engage with

financial institutions at the right moment in their programming cycle in order to allow for the integration of new design elements;

2. *Monitoring, reporting & verification (MRV)* of energy efficiency investment projects is another crucial driver of the energy efficiency investment supply. Member States are recommended to integrate internationally accepted MRV approaches in their national legislation (EVO IPMVP; international standards ISO 17743:2016 and ISO 17741:2016). This could not only be beneficial for the European energy efficiency market, but could also allow sound effectiveness assessments of the measures being put in place;
3. *Providing technical assistance and building the capacity of financial institutions*: technical assistance and capacity building measures could be provided to support financial institutions where they report a demonstrable lack of knowledge of the energy efficiency financing market and lack of capacity to deliver more bespoke product offerings to the market. Intervention could improve the ability of a Member State to achieve its policy objectives, with specific measures tailored to meet the most pressing needs of financial institutions within their country.

The **EUROPEAN COMMISSION** should endeavour to identify those Member States currently failing to engage in EU energy efficiency financing initiatives and provide them with illustrations of how EU information initiatives might help to improve their domestic supply side capability. Existing EU capacity building initiatives, such as SEI Forums, are well-functioning platforms to foster the exchange of good practices. As already mentioned, an EU common approach for standardisation and benchmarking initiatives could be further promoted to go beyond the first movers to engage more widely with financial institutions, i.e. the developed tools being universally applicable and adopted in every Member State despite some national characteristics. As the existing benchmarking databases represent an important challenge in terms of maintenance and continuous update, the use of information exchange platforms between practitioners and financiers could be more adequate (e.g. US BEDES).

→ **Effective policy design and implementation**

The analysis in the ten selected Member States concludes that the effectiveness of the measures related to the implementation of Article 17 could be further improved. **MEMBER STATES** are recommended to take into account the following five success factors during the process of design and implementation of information and training measures:

1. *Identification of clear short and long-term policy objectives* by carefully defining a strategic plan to design, implement and monitor the measure or policy programme. Moreover, an in-depth analysis is suggested to find out the main barriers and enablers (e.g. administrative, legislative or regulatory) that support or weaken the implementation of energy efficiency policies and that can be tackled through appropriate and targeted communication or training;
2. *Clear mandate, responsibility and adequate resources for the implementing entity*. The entity should be able to involve all relevant stakeholders and should have the mandate to adjust the design and implementation process of the measure(s) e.g. based on monitoring results;
3. *Integration of the information and training measure into a broader policy plan/programme and a consistent package of mutually reinforcing policy instruments (e.g. financial/fiscal instruments or regulation).* Particularly about the alignment of EED requirements with those of the EPBD, Member States are promoted to explore national provisions that ensure the reliability of EPC experts and are aligned with similar EED provisions for energy auditors, since for both processes, the legal basis, methodology and the required level of education are identical;
4. *Involvement of relevant stakeholders from all levels during design and implementation of measures*, such as municipalities, building professionals, financial institutions, utility companies. Synergies can be created when joint projects between companies and governmental organisations arise, as illustrated by the industry-driven Better Home initiative in Denmark;

5. *Design according to the needs and background of specific actor groups*, so the information provided is tailored to the customer type within the target groups. Tailoring awareness raising campaigns and training measures requires a good understanding of the barriers and enablers to take up energy efficiency investments, as well as a good view on the awareness and knowledge level of the target groups.

The identified needs or background, the available budget and the objectives of the policy measure determine the choice of the communication channel or the training's format. Awareness raising campaigns towards the general public preferably rely on mixtures of different types of mass media, such as TV, leaflets, presence at big events, websites and social media. The use of TV as a communication channel results often in a high reach of the campaign. In addition, recurring campaigns during the most relevant seasons can improve the success of campaigns. Social media is considered as a cost-effective way of getting the campaign message to the target group. To increase the attendance rate of training and to manage the costs at the same time, web-based training is suggested as an interesting alternative.

The effectiveness of training can increase by introducing specialized modules, tailoring training to the needs of the participants and – if relevant – by combining theoretical and practical approaches. SMEs are regularly targeted by the reported measures. As illustrated by the EU-funded STEEEP project, the more tailored or customised the adopted initiatives towards SMEs are, the more effective the initiatives will be.

The **EUROPEAN COMMISSION** is recommended to support Member States in improving the effectiveness of information provision and training. Hereto, existing European platforms can foster exchange of good practices to illustrate the success factors of effective policy design and implementation (e.g. Build Up Initiative, Build Up Skills Initiative, European Poverty Observatory and Concerted Actions). When the Commission emphasises and describes to Member States the role of the success factors and the added value of transparent reporting about actual policy design and implementation, this could result in more effective policies and measures at the Member State level. In addition, it could also cater for a sound assessment of effectiveness related to the implementation of Article 17 in the EU-28.

→ **Monitoring and evaluation to improve the effectiveness of information and training measures**

The tangible results or outputs of information campaigns and training are for the most part monitored within **MEMBER STATES** by means of basic performance indicators, such as the number of participants and the number of website visits. On the other hand, it is recommended that Member States carry out more monitoring campaigns continuously to estimate the raise of the measure's awareness level across market actors, besides the reach of the measure and the recall by the target audience. This way, Member States should be able to more properly adjust the design and/or implementation process of the measures to realize the desired outputs and effects. Member States are also recommended to evaluate (ex-post) their information provision, awareness raising and training more frequently. The quality of these evaluations could be improved too, although literature acknowledges that the methods to assess these types of policy measures are less robust than for other types of policy instruments, such as financial instruments. In Finland, the soft energy efficiency measures implemented in frame of the Finnish Energy Services Action Plan are evaluated in a transparent and sound way (cf. Paragraph 3.2.3).

Again, the **EUROPEAN COMMISSION** is recommended to continue encouraging Member States to share good practices in setting up continuous monitoring campaigns and regular ex-post evaluations of the implemented measures.

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ANNEX A - INDICATORS TO DESCRIBE IMPLEMENTATION STATUS IN THE EU-28 MEMBER STATES

The description of the information and training measures as adopted by the Member States in frame of Article 17 (& related articles), includes a variety of indicators to allow a proper assessment of the implementation status. Based on submitted NEEAPs of 2017 (2014, where needed) and Member States feedback, the indicators listed in the next table are collected – where available - for each adopted measure.

Table 3. Indicators collected to describe the implementation status in the EU-28 Member States

Indicators		More explanation
Title of measure		
Description of measure		
Data source		
	NEEAP2014	
	NEEAP2017	
	Other	
Measure is linked to Article … ?		
	Article 17 of EED	According to the submitted NEEAPs, if available
	Article 12 of EED	If not mentioned in the NEEAPs, most applicable Article
	Article 16 of EED	is chosen by the project team.
	Article 19 of EED	
	Article 8 of EED	
	Article 17 of EPBD	
	Article 20 of EPBD	
Status of implementation		
	planned	
	implemented	
	expired	
Start year (and End year, if known)		
Type of information measure or training initiative		
	Information provision	The overall aim is increasing the knowledge of stakeholders about energy efficiency options and benefits, how to take advantages of policies for adopting different EE options, supporting stakeholders to identify concrete energy saving opportunities, and improving their trust in and enhance the up-take of energy efficiency options (BigEE, 2013).
	Energy audit or energy management system	
	Awareness raising	The overall aim is increasing the awareness of stakeholders about energy efficiency options and benefits and improving their trust in the up-take of energy efficiency options (BigEE, 2013).
	Training qualified/accredited experts linked to inspection of heating installations or airco	Mainly linked to Article 17 of the EPBD
	Training qualified/accredit experts linked to energy	Mainly linked to Article 17 of the EPBD

	performance certification of buildings	
	Other training initiative or programme	
	Improving transparency of qualified/accredited experts	Mainly linked to Article 16 of the EED
	Capacity building training for financial institutions or banks	Mainly linked to Article 17 of the EED
	Other	
Dissemination means or channels of the measure		
	Websites	
	Mass media	TV & radio, newspaper, social media
	Calculation tools	such as estimations of investments, energy savings, CO_2 emission reductions
	Brochures or leaflets	
	Publication of datasets or lists	e.g. public lists of qualified energy auditors, energy performances of buildings to improve the transparency and knowledge of the market
	(Network of) consultation centres	
	Education and awareness	e.g. textbooks for schools, competitions, aiming to improve the knowledge and skills of students and other actors
	Training	e.g. online courses, seminars, field trips, aiming to provide actors with the relevant knowledge and skills in the field of energy efficiency
	Information network	co-ordinating marketing, information and motivation on energy efficiency programmes, such as financial incentives, financing, individual advice and energy audits, to the market actors or possible investors (BigEE, 2013)
	Energy audit or Energy Management System EMS	
	Other	
Sectors targeted (where energy savings are realized)		
	Households	
	Services sector	
	Transport	
	Industry (SME)	
	Industry (large)	
	Agriculture	
	Financial sector	
Market actors targeted		
	Final customers of energy	e.g. general public, SME's, students, tenants, car owners, housing associations
	Professionals: builders	
	Professionals: architects	
	Professionals: engineers	
	Professionals: environmental & energy auditors	
	Professionals: installers of building elements	
	Utilities	

	Financial institution: banks	
	Financial institutions: other	
	Other	including public authorities
Entity responsible for the implementation		
	National authority	
	Regional authority	
	Local authority	
	Mix national/regional/local authority	
	Other	
Self-standing measure or not?		
	Measure is complementary to other measures implemented in the MS? Please specify.	
	Measure is part of a broader policy programme or plan? Please specify.	
Is monitoring applied to the measure? If yes, please specify the available information.		
Are ex-post or ex-ante evaluations available for the measure? If yes, please specify the available information.		

ANNEX B – IMPLEMENTATION STATUS ARTICLE 17 IN THE EU-28 MEMBER STATES

→ **Overview of information measures and training initiatives adopted by EU-28 Member States**

Based on the collected evidence, the adopted information measures and training initiatives, as well as their characteristics (indicators), can be described for the EU-28. The *overview of Articles of the EED and EPBD* to which to adopted measures are related, is given in Table 4. This overview clearly indicates that most measures are mainly linked to Article 17 of the Energy Efficiency Directive (388 measures in total), followed by Article 16 of the EED dealing with the public availability of certification and/or accreditation schemes to the consumers (69 measures in total). The following Member States have an occurrence of even more than 30% of the adopted measures related to the Article 16 of the EED: Croatia, Luxembourg and Poland. A limited number of adopted information and training measures is linked to the Energy Performance of Buildings Directive (5 measures linked to Article 17 and 11 measures linked to Article 20 in total).

The table below also shows the high variation in the *number of adopted measures* in the EU-28 Member States, according to the submitted NEEAPs. Member States as Belgium (93 measures), France (39 measures) and Cyprus (35 measures) are the top-runners concerning the total amount of measures. The very high number of measures adopted in Belgium is due to the regional action plans which are included separately in the National Energy Efficiency Action Plan of Belgium. The region of Flanders adopted about 40 measures, Wallonia 13 measures and Brussels 35 measures. In addition, also the federal level in Belgium submitted 5 different measures related to Article 17. On the other hand, Member States such as Austria, Czech Republic, Germany, Hungary, Italy and Poland only included 6 to 8 information and training measures in their action plans.

Looking closer to the *type of measures* adopted in NEEAPs of the EU-28 Member States, as given in Table 5, the information measures (42% of total amount adopted in the EU-28), awareness raising campaigns (26%) as well as the “other” training (18%) are the most common types. In contrast, training for financial institutions as well as training related to the inspection of heating and cooling installations are (almost) not described in the NEEAPs, except for Cyprus, Belgium and the Netherlands. The relative share of the common types of measures differs between the Member States, for example, Spain has the strongest presence of information measures (86%) in the NEEAPs, in contrast to Greece where awareness raising measures are more submitted (78% in contrast to a share of 11% for information measures). Belgium, the Netherlands and Latvia show the strongest diversity in the type of adopted measures: 8 types in Belgium, 7 types in the Netherlands and 6 types in Latvia.

Table 4. Overview of Articles of the EED and EPBD linked to information and training measures as adopted in the EU-28 Member States

	Article 17 of EED	Article 12 of EED	Article 16 of EED	Article 19 of EED	Article 8 of EED	Article 17 of EPBD	Article 20 of EPBD	TOTAL Measures
Austria	75%				25%			8
Belgium (3 regions)	63%	5%	20%	4%	3%		3%	93
Bulgaria	73%		20%				7%	15
Croatia	38%		31%		8%	23%		13
Cyprus	69%	14%	14%		3%			35
Czech Republic	83%	17%						6
Denmark	100%							19
Estonia	89%		11%					9
Finland	59%	26%	11%				4%	27
France	87%		5%	3%	3%		3%	39
Germany	50%	13%			25%	13%		8
Greece	72%		6%	11%	11%			18
Hungary	63%		25%		13%			8
Ireland	46%	21%	4%	4%	21%		4%	24
Italy	88%				13%			8
Latvia	82%		18%					11
Lithuania	100%							12
Luxembourg	32%		68%					19
Malta	94%	6%						16
Netherlands	62%		8%		19%	4%	8%	26
Poland	63%		38%					8
Portugal	100%							9
Romania	86%		14%					21
Slovakia	93%		7%					27
Slovenia	80%		20%					10
Spain	100%							22
Sweden	54%		8%		23%		15%	13
United Kingdom	69%	6%			25%			32
EU-28	**72%**	**5%**	**12%**	**1%**	**6%**	**1%**	**2%**	**556**

Table 5. Overview of type of information and training measures in the EU-28 Member States, linked to Article 17 and related articles

	Information provision	Energy audit or EMS	Awareness raising	Training - inspection heating & cooling installations	Training - energy performance certification of buildings	Other training	Trainings for financial institutions	Improving transparancy of qualified/accredited experts	Other	TOTAL Measures
Austria	38%	13%	13%			38%				8
Belgium (3 regions)	59%	3%	2%	3%	4%	9%		10%	10%	93
Bulgaria	8%		46%			38%		8%		13
Croatia	21%		29%		7%	43%				14
Cyprus	40%		26%		6%	26%	3%			35
Czech Republic	33%		17%			33%			17%	6
Denmark	47%		32%		5%	5%			11%	19
Estonia	67%	11%	11%			11%				9
Finland	37%		41%			19%		4%		27
France	46%		31%			23%				39
Germany	63%							25%	13%	8
Greece	11%		78%			6%		6%		18
Hungary		13%	50%			13%		25%		8
Ireland	42%	4%	13%		4%	38%				24
Italy	25%		75%							8
Latvia	27%	9%	27%		9%	18%		9%		11
Lithuania	17%		83%							12
Luxembourg	32%		5%		5%	47%		11%		19
Malta	44%	25%	19%		6%	6%				16
Netherlands	62%	12%	8%	4%	4%			4%	8%	26
Poland	25%		38%			25%		13%		8
Portugal	22%		78%							9
Romania	45%		10%		5%	40%				20
Slovakia	4%	7%	74%		4%	11%				27
Slovenia	30%		20%			40%			10%	10
Spain	86%					14%				21
Sweden	54%					31%			15%	13
United Kingdom	54%	14%	29%			4%				28
EU-28	42%	4%	26%	1%	3%	18%	0%	4%	3%	549

The measures adopted in frame of Article 17 (and related articles) aim for realizing energy savings in different end-use sectors. Table 6 gives an *overview of the targeted sectors* in the Member States, as submitted in the NEEAPs. The sector of buildings, strongly covered by the households and services sector, is mainly addressed, namely 60% and 46% of the EU-28 adopted measures accordingly, which is not surprising given the scope of relevant market actors as stated in Article 17 ("*relevant market actors are: consumers, builders, architects, engineers, auditors and installers of building elements, as defined in the EPBD"*). Despite of the strong focus on buildings, small and medium-sized enterprises (SMEs) are also quite frequently in the scope of the initiatives: 24% of the total submitted measures. In contrast, the sectors of transport and agriculture are only addressed to a (very) limited extent: 14% for transport and almost no measures are adopted for agriculture.

The *market actors, addressed by Article 17*, "*to provide adequate and targeted information and advice to energy consumers on energy efficiency*", are summarized for the Member States in the same Table 6. The final customers (62%), principally the general public and to some extent enterprises, as well as the building professionals (30%), ranging from builders to auditors, are the main actors targeted. Although the emphasis of Article 17 to provide information towards financial institutions too, these market actors are only targeted in a limited number of countries: 9 countries in total, such as Denmark, Italy and Romania. The group of 'Other actors' mainly consists of local authorities & other public bodies, as well as educational institutions, e.g. schools and universities.

Table 6. Overview of sectors (left) and market actors (right) targeted by information and training measures in the EU-28 Member States

	Households	Services sector	Transport	Industry (SME)	Industry (large)	Industry Total	Agriculture	Financial sector	**TOTAL Measures**	Final customers	Professionals: builders	Professionals: architects	Professionals: engineers	Professionals: environmental & energy auditors	Professionals: installers of building elements	Utilities	Financial institutions: banks	Other actor
Austria	63%	75%		38%	63%	75%			**8**	50%	38%	38%	38%	50%	25%			13%
Belgium (3 regions)	71%	45%	11%	12%	3%	12%	1%		**93**	72%	22%	13%	12%	13%	10%		1%	1%
Bulgaria	73%	27%	7%	20%	7%	20%			**15**	53%	7%	7%	7%	20%		27%		27%
Croatia	62%	62%	8%	15%	15%	23%			**13**	46%	31%	8%		15%	23%	8%		31%
Cyprus	69%	46%		49%	37%	49%	3%		**35**	63%		9%	9%	14%	9%		6%	26%
Czech Republic	100%	100%		100%		100%			**6**	83%				50%	33%			17%
Denmark	74%	53%		32%	5%	32%	5%	5%	**19**	84%	16%	16%	11%	5%	26%	16%	16%	16%
Estonia	67%			33%		33%			**9**	89%				11%	11%	11%		
Finland	48%	56%	22%	30%	19%	33%	4%		**27**	41%	11%	4%	11%	26%	7%	7%		52%
France	38%	28%	33%	10%	3%	10%	15%		**39**	41%	13%	10%	10%	3%	15%			31%
Germany	75%	50%		38%	25%	50%			**8**	38%			13%	50%		13%		50%
Greece	83%	11%	17%	17%	11%	17%			**18**	78%				17%				11%
Hungary	50%	63%	25%	50%	38%	63%		13%	**8**	38%			13%	50%	13%	13%		25%
Ireland	21%	46%	13%	33%	33%	46%	4%	4%	**24**	50%	4%	8%	21%	8%	17%		4%	33%
Italy	75%	75%		63%	13%	75%			**8**	88%		13%	13%		13%		13%	38%
Latvia	82%	27%	9%	9%		9%		9%	**11**	64%	9%	18%		36%				
Lithuania	42%	17%	17%	8%		8%			**12**	83%			8%			8%		42%
Luxembourg	89%	53%	5%	11%	11%	11%			**19**	37%	26%	37%	37%	26%	26%			11%
Malta	69%	69%	6%	44%	6%	50%			**16**	63%	13%		6%	13%	19%	6%	6%	19%
Netherlands	62%	73%	12%	27%	15%	23%	4%	4%	**26**	81%	8%	8%	8%	12%			4%	
Poland	88%	38%	13%	25%		25%			**8**	63%		13%	13%	25%				38%
Portugal	56%	56%	44%						**9**	100%						11%		
Romania	38%	33%	5%	33%	29%	43%		5%	**21**	24%	24%	19%	33%	29%	5%	14%	19%	14%
Slovakia	37%	59%		4%	4%	7%			**27**	67%				15%				7%
Slovenia	80%	50%	20%	20%		20%			**10**	60%	10%	30%	20%	30%	10%			10%
Spain	68%	50%	73%	5%		5%			**22**	86%					5%			18%
Sweden	62%	69%	46%	38%	15%	54%	8%		**13**	62%	23%	15%	8%	31%	8%		8%	15%
United Kingdom	31%	28%		44%	6%	44%			**32**	47%	3%	3%	3%	19%	3%			9%
EU-28	60%	46%	14%	24%	12%	27%	2%	1%	**556**	62%	11%	10%	10%	16%	9%	3%	3%	17%

→ **Implementation status**

Starting from the detailed overview of measures for the Member States, the implementation status of the EED Article 17 (and related articles) can be summarized at both EU level and Member State level, by means of the following implementation indicators:

- Average availability of indicators per Member State, summarizing the availability of information to describe the measures of a Member State by means of the indicators as listed in Annex A. The average availability gives an indication of the completeness of the collected evidence from the NEEAPs as well as from the Member States consultation;
- Total number of adopted measures in the Member States, related to Article 17 as well as to other Articles;
- The average age of the adopted measures, indicated by the average start year per Member State;
- The type of channels or means to disseminate the information and training measures towards the market actors in the EU-28: the three most common channels/means across the measures are listed per Member State;
- Distribution (%) of the main end-use sectors, i.e. households, services and industry, targeted by the information and training measures in the Member States;
- Distribution (%) of the main market actors in the scope of Article 17, namely final customers, building professionals as well as financial institutions.

The resulting implementation status is presented in Table 7, where recent start years (i.e. after 2013) and high shares of sectors or market actors (i.e. higher than 25%) are highlighted in blue.

Table 7. Summary of implementation status for EU-28 Member States, based on submitted NEEAPs of 2017 (2014, where needed) and Member States feedback (recent start years >2013; and high shares >25% are highlighted in blue)

	Average availability of indicators	Total number of measures		Average start year	Top-3 Type of channels/means			Distribution (%) of targeted sectors			Distribution (%) of targeted market actors		
		Art 17	Other Art					Households	Services sector	Industry	Final customers	Building professionals	Financial institutions
Austria	65%	6	2	2008	Websites	Consultation centres	Information network	63%	75%	75%	50%	63%	
Belgium (3 regions)	61%	59	34	2014	Websites	Consultation centres	Training	71%	45%	12%	72%	34%	1%
Bulgaria	75%	11	4	2013	Websites	Education and awareness	Training	73%	27%	20%	53%	20%	
Croatia	85%	5	8	2015	Websites	Education and awareness	Training	62%	62%	23%	46%	46%	
Cyprus	81%	24	11	2014	Training	Other channel		69%	46%	49%	63%	29%	6%
Czech Republic	92%	5	1	2016	Consultation centres	Education and awareness		100%	100%	100%	83%	50%	
Denmark	91%	19	-	2014	Websites	Publication of data or list		74%	53%	32%	84%	32%	16%
Estonia	76%	8	1	2014	Websites	Education and awareness	Energy audit or EMS	67%		33%	89%	11%	
Finland	92%	16	11	2010	Websites	Training	Other channel	48%	56%	33%	41%	44%	
France	64%	34	5	2011	Websites	Training		38%	28%	10%	41%	18%	
Germany	75%	4	4	2015	Websites	Mass media	Information network	75%	50%	50%	38%	50%	
Greece	88%	13	5	2011	Websites	Mass media	Other channel	83%	11%	17%	78%	17%	
Hungary	78%	5	3	2015	Websites	Energy audit or EMS	Other channel	50%	63%	63%	38%	63%	
Ireland	93%	11	13	2011	Websites	Training	Other channel	21%	46%	46%	50%	29%	4%
Italy	89%	7	1	2016	Websites	Mass media	Training	75%	75%	75%	88%	13%	13%
Latvia	91%	9	2	2010	Websites	Consultation centres		82%	27%	9%	64%	55%	
Lithuania	60%	12	-	2008	Websites	Other channel		42%	17%	8%	83%	8%	
Luxembourg	64%	6	13	2013	Websites	Training	Other channel	89%	53%	11%	37%	58%	
Malta	92%	15	1	2013	Education and awareness	Energy audit or EMS	Other channel	69%	69%	50%	63%	25%	6%
Netherlands	73%	16	10	2013	Websites	Energy audit or EMS		62%	73%	23%	81%	19%	4%
Poland	91%	5	3	2012	Mass media	Brochure or leaflet	Training	88%	38%	25%	63%	38%	
Portugal	92%	9	-	2008	Websites	Education and awareness		56%	56%		100%	0%	
Romania	59%	18	3	2015	Websites	Training		38%	33%	43%	24%	52%	19%
Slovakia	74%	25	2	2011	Publication of data or list	Consultation centres	Training	37%	59%	7%	67%	15%	
Slovenia	73%	8	2	2014	Education and awareness	Training		80%	50%	20%	60%	40%	
Spain	71%	22	-	2013	Websites	Mass media	Publication of data or list	68%	50%	5%	86%	5%	
Sweden	83%	7	6	2014	Websites	Training		62%	69%	54%	62%	46%	8%
United Kingdom	59%	22	10	2012	Education and awareness	Energy audit or EMS	Other channel	31%	28%	44%	47%	19%	
EU-28	**78%**	**401**	**155**	**2013**	**Websites**	**Training**	**Other channel**	**60%**	**46%**	**27%**	**62%**	**30%**	**3%**

The status indicates that the average availability of information to describe the measures of the Member States is scoring medium to high, i.e. individual scores range from 59% in the United Kingdom to 93% in Ireland. The type of information that is often missing are the monitoring results and ex-post evaluations of the policy measures concerned. The average start year of measures entering into force amounts 2013 at the EU-28 level, reflecting the (very) recent implementation in half of the Member States. The start year is likely corresponding to the reporting cycle of the NEEAPs, for which the Member States had to prepare their first NEEAPs under the EED in 2014. The preferred channels/means of the Member States to disseminate the information measures and training initiatives are websites, training and other channels (e.g. events and demonstration projects). Raising the awareness by means of education is also prevalent in 8 Member States; mass media as well as consultation centres in 5 Member States each. In Figure 5 the types of measures as well as the targeted sectors are given for each dissemination channel/mean at the level of the EU-28. Member States use a variety of channels/means to target each of the end-use sectors. On the other hand, the preferred channel or mean is strongly dependent on the type of measure implemented. For information and awareness raising measures all the different means are used to address the market actors; this is logically not the case for training measures, although some of these training initiatives are also distributed by means of the "classical" channels such as websites (e.g. online training).

The same observations as described in the previous paragraph "Overview of measures" hold true for the share of targeted sectors as well as for the share of market actors, namely a dominance of the sector of households and services as well as of the market actors final customers and building professionals. Member States put very low attention on dissemination of information to the financial institutions. Looking closer to the market actors addressed by each type of measure in the EU-28 (see Figure 6), information is provided towards each type of market actors, but awareness raising campaigns tend to be more focused towards final customers (e.g. the general public), utility companies and other actors (e.g. local authorities). The building professionals are preferably addressed by information provision and (specific) training measures.

Figure 5. Cross-table of targeted sectors (top) and type of measures (bottom) per type of channel or mean used for the dissemination of information and training measures in the EU-28

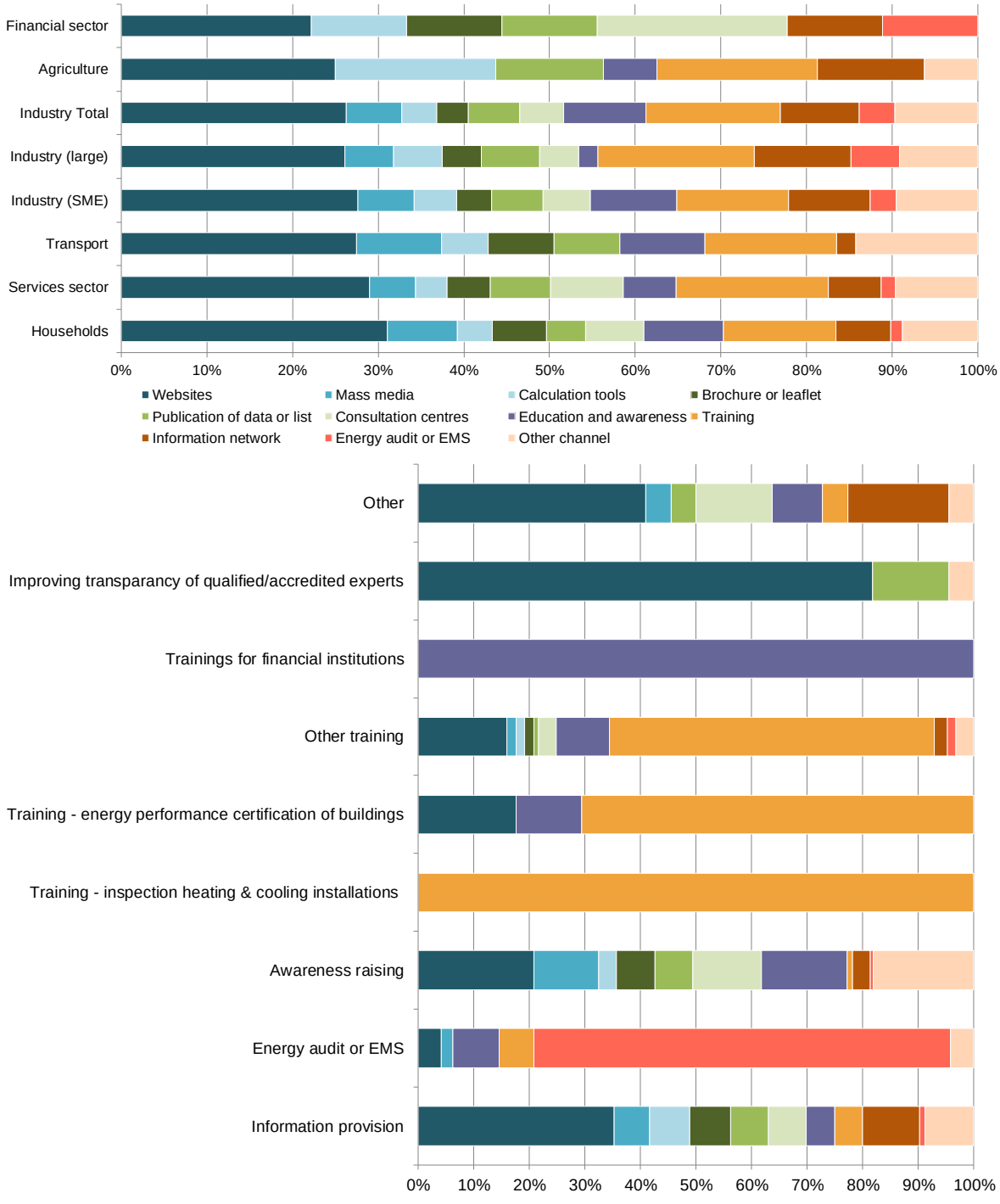
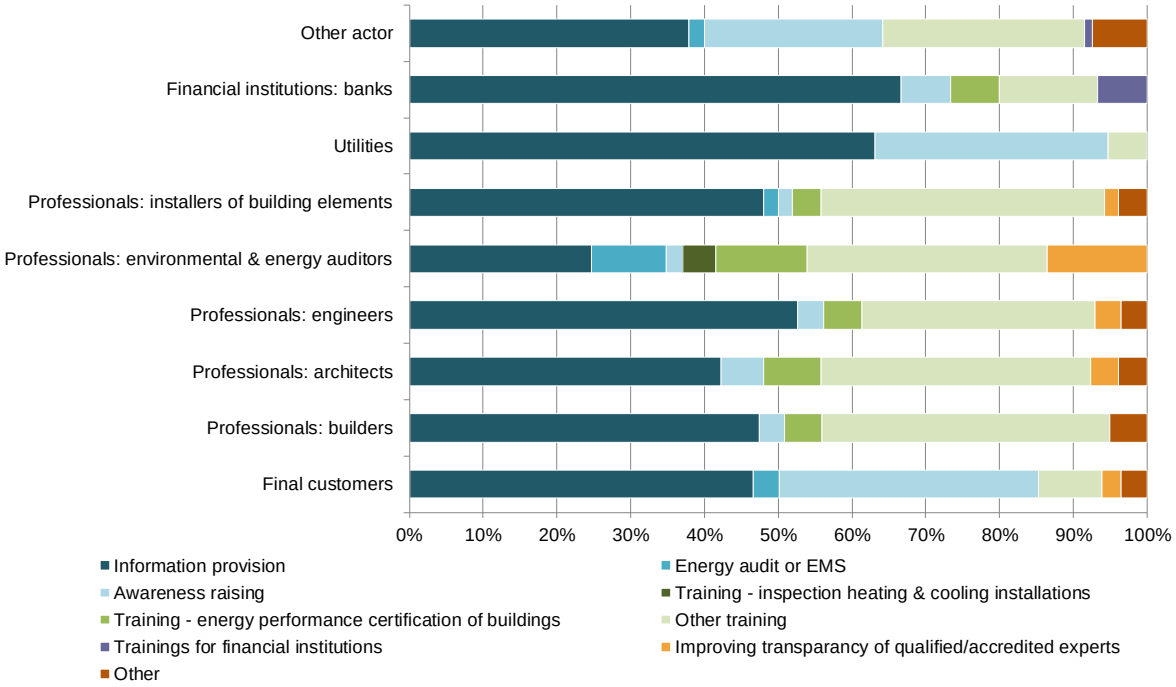


Figure 6. Cross-table of targeted market actors and type of information and training measures linked to Article 17 and related articles



ANNEX C – MEMBER STATES' PRACTICES IN THE TEN SELECTED CASES: EVIDENCE FROM THE NEEAPS AND LITERATURE ABOUT THE EFFECTIVENESS OF MEASURES

For each of the selected Member States, this Annex gives an overview of the evidence collected from Member States' representatives and literature (incl. NEEAPs) for the implemented policy measures or programmes/plans to ensure wide dissemination of information on energy efficiency. A distinction is made between information and training measures.

BELGIUM

In the NEEAP (2017), 93 information and training measures are identified. The high number of measures can be explained by the fact that in the Belgian federal state, energy efficiency policy is a responsibility of the three regions, with supporting measures from the federal government. The national plan is a compilation of three separate regional plans (Flemish, Brussels-Capital, Walloon Region). The Brussels Region (35 measures) and the Flemish Region (40 measures) represent 81% of the information and training measures.

→ **Information measures**

Source: EEA database on climate change mitigation policies and measures in Europe (last update: 16/11/2017)

Specific measure: eco-driving

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The ex-ante assessment indicates that, for the period 2020–2035, 106,870 kton of CO_2 equivalents can be reduced by eco-driving.

Source: Odyssee Mure – description of measure "Assist households proactively about energy and eco-construction to improve the quality and energy comfort of their residence" (last update: 28/02/2018) and NEEAP Belgium 2017

Specific measure: HomeGrade (Brussels Capital Region)

SHORT DESCRIPTION: HomeGrade (which resulted from the merger, in February 2018, of the Urban Centre and the Energy House) informs citizens on energy efficiency and rational use of energy by means of awareness raising and information-dissemination actions as well as home visits.

The Government of the Brussels Capital Region subsidizes a number of non-profit associations for offering additional services:

- The Energy Services, with a focus on fuel poverty;
- The Brussels Energy Agency (ABEA), which has informed and advised residents of the Region on energy saving measures since 1996;
- The Platform Passive House (PMP), a non-profit organisation that aims to encourage the realization of buildings with very low energy requirements based on the concept of the passive house. It disseminates information and provides training, expertise and guidance to professionals and individuals. It is also the body that certifies passive buildings in the French-speaking part of Belgium;
- The Habitat Network, which brings together subsidized associations that form the link between the residents and public authorities, and advises on renovation and integrated local development;
- "Infor gaz-elec", an information service on gas and electricity.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: As a result of HomeGrade, 2.1 GWh of final energy was saved in 2015 and 3.5 GWh in 2016 (Odyssee-Mure and NEEAP 2017).

In the NEEAP 2017, the impact of this measure is estimated to be 32.97 GWh of final energy saved for the period 2014–2020 (2014–2017: 21.18 GWh; 2018–2020: 21.18 GWh).

Source: NEEAP Belgium 2017

Specific measure: car sharing (Brussels Capital Region)

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In the NEEAP 2017, the impact of car sharing initiatives such as Cozycar, Cambio and Zencar is estimated to amount to 379.25 GWh of final energy saved, in the period 2014–2020.

Source: NEEAP Belgium 2017

Specific measure: energy scans SMEs (Flemish Region)

SHORT DESCRIPTION: On behalf of the Flemish Agency for Innovation and Entrepreneurship (VLAIO), five consultancy firms carried out 400 energy scans in small and medium sized companies in Flanders.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The total primary energy consumption of the scanned companies was 5.11 PJ. A total of 1,949 quantified recommendations were worked out, involving a total annual energy saving of EUR 11.3 million. The necessary investments to realize these savings were estimated to be approximately EUR 54.3 million in total. A survey afterwards showed that about half of the proposed measures was implemented, accounting for an annual primary energy saving of 0.37 PJ.

Source: Ondernemingsplan 2015 - 2019 – Actualisatie 2018, jaarrapport 2017 (Vlaams Energieagentschap)

Specific measure: information provision by means of www.energiesparen.be (Flemish Region)

SHORT DESCRIPTION: The main communication channel to provide information on energy-related issues is the Flemish Energy Agency's website, www.energiesparen.be. The main focus of the website is on the energy saving calculators and energy premiums. In 2017, the Flemish Energy Agency launched the solar map, which gives an indication of the potential of a roof for solar thermal or photovoltaic solar panels.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The website has between 100,000 and 125,000 visitors per month. On an annual basis, about 75,000 brochures are ordered via the website and 90,000 brochures are downloaded. In 2017, the number of consultations of the solar map exceeded 500,000 consultations. The budget for external communication of the Flemish Energy Agency amounts to EUR 350,000 in 2018.

Source: Het energiebewustzijn en -gedrag van de Vlaamse huishoudens 2017 (Kantar TNS, Mathias Bonneu, Ellie Jacques, Véronique Lootens, 2017)

General and specific measures: brochure on premiums; "nearly zero-energy renovation" campaign, website at www.energiesparen.be (Flemish Region)

SHORT DESCRIPTION: In 2017, the Flemish Energy Agency funded Kantar TNS to assess to what extent the Flemish population is aware of the social importance of the rational use of energy (energy consciousness), but also how they actually behave (energy behaviour).

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In 2017, 9 out of 10 Flemish people considered energy efficiency important. 6 out of 10 Flemish people described themselves as (very) energy efficient. This was slightly less than in 2015 (-5%). The most popular future investments (for the next 5 years) were: roof insulation (12%), energy-efficient boiler (11%), photovoltaic solar panels (10%) and HR or triple glazing (9%).

In 17% of Flemish households, someone received training on energy or technical installations.

Slightly more than half of Flemish households were aware of the Flemish roof insulation standard.

4 out of 10 Flemish households were aware of the existence of the Flemish energy loan.

In 2017, 6 out of 10 Flemish households were aware of the energy efficiency premiums offered by the distribution grid operators. Residents of detached houses were the most informed, residents of an apartment the least. 4 out of 10 Flemish households who were aware of the premium also requested one. Families who renovated scored slightly higher: 6 out of 10 who were aware of the premium also requested one.

3 out of 10 Flemish households who rented out a house or apartment were aware of the premium for roof insulation, cavity wall insulation or HR glazing.

4 out of 10 (mainly higher-educated) Flemish households knew the website "www.energiesparen.be". The visitors of the website mainly searched for information about

subsidies (48%), news about energy-related topics (31%), information on insulation (19%), solar energy (18%) and heating (11%).
In 2017, the Flemish Energy Agency launched the term BENOveren ("nearly zero-energy renovation"), complemented with a communication campaign and logo. About 3 out of 10 Flemish people knew the term and logo. Higher-educated people who had already renovated were better informed.
The brochure on premiums was known by 25% of the Flemish population. Families who had renovated their house in the past five years were better informed.
The main motivation to consider an energy renovation was reduction of the energy bill.

Source: Bedrijven: financiële ondersteuning en toekomstplannen - Resultaten uit de enquête 2016 (Flemish Energy Agency, October 2016)

General: phone interview with energy managers of companies with 5–200 employees to assess knowledge of financial instruments (Flemish Region)

SHORT DESCRIPTION: Since 2011, the Flemish Energy Agency organises each year a phone interview with more than 1,000 energy managers in Flanders. The focus group is made up of companies with 5 to 200 employees, excluding the government, education and energy sectors. By interviewing the energy managers, the Flemish Energy Agency aims to assess their knowledge of the financial instruments in place, such as subsidies, fiscal instruments, grants, certificate schemes for renewable energy and CHP.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In 2016, only 10% of the energy managers were not familiar with the financial instruments in place. The green certificate scheme and the increased investment deduction for energy-saving investments were the most known financial instruments.
In 2016, 33% of the energy managers were not familiar with the premium offered by the distribution grid operator to support energy-saving investments on the basis of an energy audit or energy study.
In 2016, 60% of the energy managers had never applied for one of the financial instruments. Only 9% of companies could not be convinced to take up energy-saving investments. The majority of the companies had plans or could still be convinced to take up investments. Investments in energy-efficient lighting and renewable energy technologies were the most popular.

Source: Energierenovatieprogramma - Vlaams Energieagentschap (TNS Dimarso, October 2007)

General: survey to know barriers and enablers of EE investments in frame of Energy Renovation Programme (Flemish Region)

SHORT DESCRIPTION: In 2007, in the context of the Flemish Energy Renovation Programme 2020, TNS Dimarso did a phone survey with more than 1,000 homeowners. By interviewing these homeowners, the Flemish Energy Agency aimed to get an indication of the barriers and enablers to taking up energy efficiency investments.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: There is significant potential in taking up energy efficiency investments. Reducing energy consumption, and thus savings on the energy bill, is the main motivator for taking up energy efficiency investments. For the low-income households and homeowners who bought their house, increasing the comfort of the home is an important motivator to invest. Roof and/or attic insulation and the installation of double glazing especially are considered to improve the comfort level. The replacement of the heating system is less often considered comfort enhancing.
In particular, homeowners without double glazing and owners who do not have an energy-efficient heating system have the greatest incentive to invest.
The main reason for not taking up energy-saving investments is the absence of a perceived need. For instance, homeowners who have a boiler that still works or an (uninsulated) attic that is not used do not see the need to invest. The financial aspect also plays a significant role in the decision to invest in double glazing or not.

The lack of investment can – to a very limited extent – be explained by the lack of information. 6 out of 10 homeowners are familiar with the existing (financial) instruments.
Homeowners with the highest income are the best informed about the existing instruments and although they already have a more high-quality home, they do take up more energy-saving investments. Homeowners with the lowest income, who have a property that in terms of energy efficiency scores lower, are less aware of the existing instruments and take up fewer energy-saving investments.
Some of the homeowners do not take up energy-saving investments because of their advanced age, the advanced age of the property or relocation plans. With a strongly aging population this will be an argument that gains importance in the future. Homeowners between 25 and 40 years have the highest intention to invest. Even if there were an obligation to invest, only half of the homeowners that would have to invest would immediately begin the process.
Even in cases of a (very large) financial incentive of 75% reimbursement of the total costs incurred, 30% of the homeowners would still not be willing to take up energy-saving investments.
Targeted communication has to raise awareness of the need for energy-saving investments and has to provide information about the financial yield of investments made.

Source: Actiebereidheid inzake dakisolatie na communicatiecampagne (TNS Media, Olivier Dequinnemaere, Karen De Kock, March 2009)

Specific measure: information campaign roof insulation - "Lekt uw huis ook geld? Doe er iets aan, isoleer uw dak!" (Flemish Region)

SHORT DESCRIPTION: In 2009, the Flemish government launched a large-scale roof insulation campaign, linked to the introduction of the Flemish roof insulation premium. On the one hand, the campaign included the distribution of a leaflet as an appendix to all newspapers (1.9 million copies were distributed). On the other hand, the campaign included a radio and a TV commercial for several weeks, a printed advertisement and an online banner. A marketing campaign was set up during Batibouw (yearly construction fair) and buckets were distributed with the slogan of the campaign.
TNS Media assessed the effectiveness of the information campaign. In March 2009, more than 1,000 Flemish households were interviewed by phone.
The survey looked at the spread of the campaign and how it was perceived by the households. Also, the impact of the campaign on future insulation behaviour by Flemish households was assessed.
LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The spread of the campaign was considered to be sufficient (60% recognition compared to 80% theoretical range). The lowest income households, tenants and apartment residents were relatively less reached. This could probably be explained by the fact that they were also less interested in insulating their roofs.
The campaign was very popular and also encouraged the investment in insulation. However, the Flemish Energy Agency was advised to look at additional/other measures to encourage people over 65, single people and the lowest income households, tenants and apartment residents.
7 out of 10 considered energy efficiency very important. Only 3% considered energy efficiency not important. 8 out of 10 households thought that their house was (very) energy efficient. Only 3% did not reflect on its energy use.
9 out of 10 confirmed that the campaign was clear, informative, original and appropriate to the Flemish government and also encouraged investments in roof insulation.
On average, 40% of the households that did not have roof or attic floor insulation were planning to insulate, which was significantly higher for those who saw the campaign (48%) compared to others (32%). About half of them planned to carry out the insulation themselves. Insulation of roof or attic floor was relatively less planned by people over 65 years old, single people, or people who only received primary education, had an income of less than 1,000 euros or lived in an apartment.
The main reasons for not insulating the roof or attic floor were: renting the house, being too old and it not being a priority, lacking time or money.

6 out of 10 had already heard about the website "www.energiesparen.be", which was more the case for white-collar workers, higher-educated people, the highest income households and those who were aware of the Energy Renovation programme 2020 and the campaign on roof insulation.
Three-quarters knew the Flemish roof insulation premium of 500 euros. This premium was relatively better known by people over 55 years, non-active people, 2-person households, homeowners between 31-50 years, middle-sized income households, with the perception that the current insulation is insufficient and those who were aware of the Energy Renovation programme 2020 and the campaign on roof insulation.

Source: Klimaatenquête 2017 – Eindrapport (Federale overheidsdienst (FOD), Volksgezondheid, Veiligheid van de Voedselketen, en Leefmilieu, December 2017)

General: public survey to assess knowledge and awareness about climate change and willingness to act (Federal Government)

SHORT DESCRIPTION: In 2017, the Federal Government organised the fourth national public survey (by mail) to assess the knowledge and awareness of the Belgian public about climate change and their willingness to act. In 2017, 1,500 Belgians were surveyed.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Belgians are mainly passively informed by means of traditional media such as TV, radio, newspapers and magazines. Nevertheless, there was almost a doubling of social media as a reception channel (35% compared to 20% in 2013).

For the active search for information, websites are the most used source of information (67% compared to 39% in 2013). Striking here is the emergence of social media as a source of information (21% compared to 9% in 2013), and the growing importance of many other channels (personal conversations, schools, books, etc.). This gives the impression that Belgians look more actively for information compared to 2013.

The most preferred sources of information (passive) are informative programmes, documentaries or fiction on TV (49%), websites (47%) and newspapers (33%). Information evenings (2%), exhibitions or fairs (2%) and leaflets (1%) are the least preferred sources of information.

The importance of social media, as a channel to passively receive information, and websites, as a channel for actively seeking information, has increased significantly since 2013. The importance of social media is higher for young people and in cities, and lower in the Walloon Region, compared to the other Regions.

The results of the survey show that the education sector, together with the authorities (in order: federal, local, European and regional), are a very desirable and thus also suitable source of information. Belgians prefer to be informed by educational institutions (64%), independent scientists (62%) and the federal government (60%).

The majority of the Belgians surveyed have been actively or passively informed about financial instruments through conversations with friends, family or colleagues (51%), via websites (49%) or via newspapers (44%). In particular, websites are growing in importance, while awareness-raising campaigns on TV continue to lose popularity.

Source: Jaarverslag 2016 (Leefmilieu Brussel, 2017)

Specific measures: seminars and education on sustainable buildings, facilitator sustainable buildings, sustainable building guide, website of Brussels Environment (Brussels-Capital Region)

SHORT DESCRIPTION: In 2016, the Department of Energy, air, climate and sustainable buildings organised for the second time an online survey to assess the satisfaction of building professionals active in the Brussels-Capital Region related to tools and services provided by the Department. About 700 professionals gave their opinion via this questionnaire. 56% of the respondents were architects, 29% building owners (public or private) and 15% identified themselves as contractors. The budget for this online survey amounted to EUR 20,000.

The following services and tools were evaluated in the survey:

- seminars and education on sustainable buildings
- Facilitator Sustainable Buildings
- Sustainable Building Guide
- Information for building professionals on the website of Brussels Environment.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: 3 out of 4 building professionals considered the tools and services' quality useful and an important source of information, but also would like to see them improved.

Source: Jaarverslag 2014 (Leefmilieu Brussel, 2015)

Specific measure: sustainable building guide and Sustainable building website (Brussels Capital Region)

SHORT DESCRIPTION: The Sustainable building guide and sustainable building website aim to improve the skills of building professionals related to design, materials and products, techniques, green technology and sustainable building and so make them more sustainable and competitive.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The budget for development of the guide and website amounts to EUR 355,000. The website contains almost 5,000 articles, videos, training courses, etc. The guide attracts an average of 6,000 visitors per month.

→ **Training measures**

Source: Implementation of the EPBD in Belgium – Brussels Capital Region (status in December 2014) (Michael Govaert, Geoffroy Knipping, Yves Mortehan, Jean-Henri Rouard, Marianne Squilbin, Brussels Environment (IBGE))

Specific measure: training qualified/accredit experts linked to energy performance certification of buildings (EPC, EPB) (Brussels Capital Region)

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Professionals responsible for certifying new buildings and major renovation projects (EPB advisors) must be accredited. To become accredited, they must have an architecture or engineering degree and must have followed five-day training sessions, as well as retraining every two years. Monitoring and support for **EPB advisors** are provided by Brussels Environment. In 2012, an independent organisation evaluated the quality of the work of 30 EPB advisors. The results were quite positive; no EPB advisor were suspended.

EPCs are only issued by accredited experts who followed a specific training programme (course and exam) and requested accreditation from the Brussels Environment. The training is conducted by private training centres. In 2014, seven training centres were accredited and there were about 1,500 registered qualified experts for residential, non-residential, and public buildings. The government set up a Quality Assurance Scheme to monitor qualified experts and to improve the scheme. In 2013, 38 qualified experts and 156 EPCs were monitored, and in 2014 this concerned 59 qualified experts and 236 EPCs. Approximately 60 experts had their accreditation temporarily suspended.

There are no minimum requirements for qualification of **experts of EPCs for public building**. The training is conducted by private training centres. In 2014, three training centres were accredited.

In 2013, there were nearly 1,200 professionals who could periodically inspect boilers and over 400 who could approve new or upgraded heating systems. It is estimated that full implementation of the regulations on heating facilities can reduce CO_2 emissions related to Brussels buildings by 6%.

Air-conditioning (AC) systems of more than 12 kW must undergo a periodic inspection performed by an accredited professional. In 2014, only about 15 professionals were accredited to perform periodic inspections of AC systems. It is estimated that full implementation of regular inspections and mandatory maintenance, can reduce consumption related to AC systems by 5 to 10%, provided the AC system maintenance is correct.

Source: Implementation of the EPBD in Belgium – Walloon Region (status in December 2015) (Benoit Fourez, Ronald Gilot, Arnaud Collard, Jean-Claude Matagne, Pascal Delhaye, Marie-Eve Dorn, Public Service of the Walloon Region – Department of Energy and Sustainable Building) NEEAP 2017

Specific measure: training qualified/accredit experts linked to energy performance certification of buildings (EPC, EPB) (Walloon Region)

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In order to issue EPCs for existing residential or non-residential buildings, qualified experts must attend a training course and then pass an exam. In 2014, more than 2,000 EPC assessors were accredited. Among them, more than 88% were engineers or architects.

In 2015, approximately 2,600 technicians were certified to inspect gas fuel boilers, and roughly the same number for liquid fuel boilers. 13 training centres were recognised for providing training to technicians inspecting liquid fuel boilers, and 9 for inspecting gas fuel boilers.

January 2017, 2,159 residential EPB certifiers were licensed as natural persons and 13 were licensed as legal entities. (NEEAP 2017).

Source: Implementation of the EPBD in Belgium – Flemish Region (status in December 2014) (Ann Collys, Maarten De Groote, Marijke De Meulenaer, Ineke De Schoenmaeker, Jens Franken, Wina Roelens, Flemish Energy Agency, Robrecht Van Rompuy, Sam De Coster, Environment, Nature and Energy Department)

Specific measure: training qualified/accredited experts linked to energy performance certification of buildings (EPC, EPB) (Flemish Region)

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Only recognised qualified experts can issue EPCs for existing residential buildings. A candidate to be a qualified expert has to follow a recognised training programme and pass the centralised exam organised by the region.

Central heating systems have to be inspected by a recognised technician before they are used for the first time. Once in use, these systems must be inspected periodically, checking the proper operation as well as several safety aspects. Technicians must complete a specific initial training and attend in-service training at least every five years.

In 2014, there were about 2,500 qualified experts for existing residential buildings. In 2013, rather few participants (278) took the centralised exam for qualified expert (EPC), compared to the number of candidates following the training course (609). The success rate was also low: only 43% of the participants succeeded in passing the exam.

In 2014, there were about 1,200 qualified experts for new buildings.

In 2013, rather few (29) took the exam for qualified expert (EPC) for public buildings, compared to the number of candidate following the training (49). The success rate was high: 93% passed the exam.

In 2014, there were 1,299 registered qualified experts (EPC) for public buildings.

Since 2014, the number of recognised technicians for the inspection of boilers with liquid or gaseous fuels exceeds 5,000 and 8,000, respectively.

Source:
Telefonische enquête aangaande de opleidingsbehoefte en het opleidingsaanbod van BEN-bouwen bij aannemers (Ipsos Loyalty, Geert Franken, Stijn Monsieur, 2016);
Beknopte resultaten van de REG enquête 2017 (VEA, September 2017)

Specific measure: training "nearly zero-energy building" (Flemish Region)

SHORT DESCRIPTION: In mid-2016, Ipsos Loyalty carried out phone interviews with 500 contractors (site and team managers) in Flanders whose construction activities have an impact on the energy performance of buildings (houses, schools, offices). By interviewing contractors, the Flemish Energy Agency aimed to evaluate the "nearly zero-energy building" training sessions attended and the willingness of the contractors to follow these training sessions.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Within the group of contractors who had already attended one or several "Nearly zero-energy building" training sessions, 94% indicated that they stay up-to-date with EPB regulation. The most frequently consulted sources of information are websites and mailings from federations, printed publications from third parties and newsletters from manufacturers.
In 2016, 1 out of 4 contractors completed at least one training session on "nearly zero-energy building". They prefer training sessions organised by manufacturers of materials and installations. 1 out of 4 contractors are not willing to attend a training session.
Companies with more than one employee have attended significantly more than one training session. Installers of renewable energy sources and heating represent the highest share of attendees (37%), followed by roof workers (31%).
Of the training sessions attended, 70% combine theory and practice. Only 5% of the training sessions attended have an exclusive practical approach. Attendees are the most satisfied with the combined training session. Anno 2016, the majority of the training sessions attended are combined training sessions. Yet, contractors indicate
that there should be more focus on the practice.
Contractors who attended a training session on "nearly zero-energy building" are usually satisfied with the teaching material.
Contractors prefer short, specialized modules, customised training sessions and practical training on site. 44% of them indicates that they have contacted an external party to organise a training session on "nearly zero-energy building".
On average, contractors are willing to spend EUR 515 annually on "nearly zero-energy building" training. In companies with more than one employee, the annual training budget rises to EUR 715 on average.

Source: Onderzoek Implementatie EPB bij Vlaamse architectenbureaus (Aida Link, September 2009)

Specific measure: training of architects on EPB regulation (Flemish Region)

SHORT DESCRIPTION: In September 2009, the Flemish Energy Agency, in collaboration with the most important architects' organisations (NAV and BVA), commissioned a survey to AIDA Links of 400 Flemish architectural firms with the aim of assessing the implementation of the EPB regulation in Flanders.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: 26% of the architects surveyed indicated that they needed training on the EPB regulation (smallest organisations: 33% – largest organisations: 20%), especially on software (16%) and ventilation (14%).
54% of EPB reporters indicated that they needed training on the EPB regulation, especially on software (38%).
The main sources of information used are the external EPB reporter (72%), the Flemish Energy Agency (www.energiesparen.be) (56%) and the energy consultant (22%).
25% of the architects interviewed considered it a priority for the Flemish Energy Agency to raise awareness by more frequent and transparent information provision such as newsletters, training courses, and technical information campaigns targeted at professionals.

CYPRUS

→ **Information measures**

Source: Cyprus Annual report for EED[33], 2017

General: informative/soft measures

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The national annual report for EED indicates the savings achieved in 2015 related to informative measures (mainly soft measures such as information campaigns, training, workshops etc.): 0.495ktoe. The following factors were assumed to estimate the savings of soft measures:

- Savings factor of an awareness raising campaign [%] = 2%, based on IDAE, 2009, BEHAVE - Changing Energy Behaviour Guidelines for Behavioural Change Programmes, IEE-supported project;
- Percentage of affected persons of a specific target group = 40%.

It is assumed that the soft measure will result in 0.614 ktoe savings in 2016.

The savings estimated do not incorporate the informative measures that address explicitly the public sector. Savings resulting from informative/soft measures that are targeted at the public sector:

- Year 2014: 3.521 GWh/yr;
- Year 2015: 3.953 GWh/yr;
- Year 2016: 2.476 GWh/yr.

Source: Proposal for an Energy Efficiency Awareness Campaign in Cyprus[34], GIZ, June 2017, funding from the European Commission Structural Support Service and the German Federal Ministry of Economy and Energy

General: assessment of past awareness raising activities

SHORT DESCRIPTION: In recent years, a variety of information measures have been initiated by the government of Cyprus or other state actors as well as non-state actors. The information has been disseminated with varying intensity and not in a systemic manner and not under a common brand.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Some of the measures were regarded by different stakeholder groups and MECIT as highly effective (e.g. energy labels, fairs, training, competitions, local energy days) and should be continued – possibly with some modifications. Others, notably website, publications, electronic and social media, and some measures linked to EU Directives were not yet able to demonstrate their full potential and would need to be reviewed or complemented in terms of content and use (within the boundaries set by EU rules).

Households: Overall the awareness activities initiated by the government were appreciated but regarded as insufficient in depth and scope.

- General awareness level of energy efficiency:
  There is a basic knowledge among consumers on rational use of energy, though this does not translate into action on a broader scale. Especially when it comes to medium and long-term planning of energy efficiency investments, the knowledge is deemed to be insufficient. Also, societal and climate impacts of energy saving measures don't seem to have been sufficiently communicated yet.
- Assessment of past awareness raising activities:

[33] https://ec.europa.eu/energy/sites/ener/files/documents/cy_annex_to_annual_report_2017_en.pdf

[34] http://www.mcit.gov.cy/mcit/EnergySe.nsf/All/B5969066F97FB710C22581D80035DB7F/$file/Study%20results_Energy%20Efficiency%20Awareness%20Campaign%20in%20Cyprus.pdf

Main source of information on energy saving is the central government. Mass communication activities by MECIT, inter alia for promoting the Special fund for EE and RES and the "I save I upgrade" scheme, have been cited by most interviewees, though it was recommended to run them over longer periods and at more frequent intervals. Furthermore, the geographical outreach should be increased, and activities not only confined to the major cities.
The government website was cited as an excellent source of information but mainly for specialists and not the general public. It was also perceived as very "government-like" and should be redesigned to better target the average consumer.
Leaflets to be distributed with the electricity bills were deemed rather ineffective.

Services sector:

- General awareness level of energy efficiency**:** information levels vary a lot between the different sub-sectors. Small and micro enterprises (mainly retailing and restaurants) which are struggling with the day-to-day management of their business are the ones least aware of the economic benefits of energy efficiency investments, legal obligations and funding possibilities.
- Assessment of awareness raising activities: respondents were in general aware of information measures initiated by the government. However, for businesses this was not the only source of information since the Chamber of Commerce and Industry, Industrialist and Employers' Federation or Hotel Association is or has been organising awareness raising activities (fairs, workshops, training etc.) – sometimes with participation of government officials. Previous campaigns were regarded as rather general, too short and underfunded. They relied mainly on mass media and did not target the services sector in particular and messages should be more adjusted to the different target groups **(**e.g. through electronic newsletters or special seminars back-to-back with events).

The number of staff that were allocated for designing, implementing and monitoring the Cypriot measures obviously depends on the respective measure. In general, the staff involved ranged from 1 to 3 people. The allocated resources for the measures implemented by the Ministry were between 20,000 and 30,000 EUR per year**.** The study "A proposal for an Energy Efficiency Awareness Campaign in Cyprus" (2017) identified the need for more resources to be allocated to the campaigns. The European Commission offered financial support to Cyprus and thus resources invested in information channels increased based on the study findings (different resources were allocated to each channel). The MS policy makers outlined the importance of all communication channels used for the information measures. They considered them all particularly effective and significant, although the main criteria for deciding on the communication channel is the available budget. In general, the measures that were based on current legislation were developed under a strategic plan, so that they could be designed, implemented and monitored accordingly.

→ **Training measures**

Source: We-Qualify Final Report[35], IEE co-funded project, 2016

Specific measure: the project WE-Qualify and the Build up Skills initiative, 2013-2016 - Training programmes/Certification exams

SHORT DESCRIPTION: The WE-Qualify project 'Improve Skills and Qualifications in the Building Workforce in Cyprus' is a co-funded project through the 'Intelligent Energy Europe' programme, under the European initiative 'Build Up Skills'. The initiative aims to promote the continuing

[35] http://www.cea.org.cy/we_qualify/wp-content/uploads/2017/01/WE-QUALIFY-FINAL-PUBLISHABLE-REPORT_EN_new.pdf

vocational education and training of workers in technical occupations in the construction sector, as well as other relevant sectors dealing with installation and maintenance of renewable energy systems and energy efficiency measures.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Educational training programmes for the development of the following skills were organised:

- Skill 1: Installation of thermal insulation:
  Three training courses were completed on the installation of thermal insulation systems – some output performance indicators: 24 hours of classroom training; 9 hours of hands-on practical training; number of applicants: 100, of which 71 attended and 69 were certified**.**
- Skill 2: Installation of thermopanes and exterior sunshades:
  One training course was completed on the installation of thermopanes and exterior sunshades – some output indicators: 24 hours of classroom training; 9 hours of hands-on practical training; number of applicants: 14, of which 7 attended and 7 were certified.
- Skill 3: Installation and maintenance of biomass boilers and stoves:
  One training course was completed on the installation of small-scale biomass boilers and stoves (Approved by the Ministry of Energy, Commerce, Industry and Tourism and in cooperation with the Agricultural Research Institute for the practical training) – some output indicators: 31 hours of classroom training; 9 hours of hands-on practical training; number of applicants: 18.

The participants who successfully completed the training programmes have significantly improved their skills and knowledge on the subject. In addition, with the WE-Qualify certification, they have achieved a wide recognition of their professional competence and skills, a competitive advantage and increased career advancement prospects, recognition and enhanced reputation in their field of work.

The names of the certified installers who have acquired the certification mark WE-Qualify were published in a publicly accessible directory on the project's website.

Evaluation of the training programmes:

- An operational qualification scheme for the workforce in the energy efficiency building sector and theoretical and practical training for the blue-collar workers and the trainers for three skills.
- Acknowledged quality standards, professional frameworks and training methodology – taking into account essential national adaptations and legislation.
- Involvement of all stakeholders' groups via dissemination and National Consulting Committee (NCC) and qualification documentation presented to policy/decision makers in Cyprus.
- A large proportion of the respondents indicated that the WE-Qualify project has improved their knowledge and skills.
- The majority of the respondents believe that the acquired certificate will give them a competitive advantage in their work.
- The insulation installers were in general satisfied with the training courses, however a number of them suggested increasing the hours of practical training.
- The majority of the respondents were satisfied with the timetable and the overall duration of the programme.

Source: Phone interview Cyprus' policy makers, Ministry of Energy, Commerce, Industry and Tourism MECIT May 2018

General: training measures

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The main enablers in the design, implementation and monitoring of the training measures are the available resources, the feedback collected from the target groups, the efforts to satisfy the target group's needs and the public consultation that was coordinated by the affiliated parties.

The availability of a strategic plan for designing, implementing and monitoring depends on the measure. Although there are training measures (such as energy audit candidates and heating system

inspectors) that result from existing legislation, there are also other measures (such as ESCO-programmes) that are initiated by the Ministry of Energy, Commerce, Industry and Tourism (MECIT) in collaboration with other stakeholders.

Barriers to implementing training measures depend on the measure. For example, some typical barriers to energy audit-related training are the additional cost for the trainee to complete their training and obtain their certification; the personal time that needs to be dedicated; and the low interest in training, leading to an increase of the cost per individual (700–800 EUR).

DENMARK

→ **Information & training measures**

Source:
National Energy Efficiency Action Plan (2017);
Evaluering af Bedre Bolig - Indikatorer på effekt, virkning og spredningeasure (NIRAS) (December 2016);
BUILDUP webinar (6/11/2017, BPIE) - "A look behind the Better Home Initiative";
New Danish Strategy for Energy Renovation of Buildings, State of Green, 2014

Specific measure: Bedre Bolig scheme (Better Home)

SHORT DESCRIPTION: Bedre Bolig (Better Home) was launched in autumn 2014 by the Danish Energy Agency as part of the Danish Government's Growth plan. The aim of the scheme is to give expert advice throughout the energy renovation process and make it easier and clearer for homeowners to renovate (one-stop shop). Better Homes advisors are trained to develop legally required competencies and expertise in energy innovations (construction and renovation). The Better Home initiative is one of the 21 initiatives in the Danish Strategy for energy renovation of buildings. The Energy Renovation Strategy resulted from the Danish Energy Agreement of 2012 and engages more than 40 organisations within the fields of building, energy and financing as well as in knowledge institutions (Source: New Danish Strategy for Energy Renovation of Buildings, State of Green, 2014). Among other things, Bedre Bolig focuses on developing cooperation between homeowners and financial institutions, enabling financial advisers to better advise their customers on the financing of energy improvement projects. This means that, in connection with the establishment of the scheme, a calculation program and a report format have been developed which give the financial institutions a solid basis on which to assess the potential savings that could be made in a building and to facilitate the dialogue between homeowner and bank. The scheme has been targeted homeowners until the year-end 2017. As of 1 January 2017, the scheme was expanded to also cover large buildings and apartment blocks. (NEEAP, 2017)

The Better Home initiative is a homeowner-driven renovation model (BUILDUP webinar, 6/11/2017). The model aims at making the supply side more service-oriented and increasing awareness at the demand side. What makes it interesting and unique is that, unlike the government-driven one-stop shops that are popping up all over Europe, Better Home is industry driven. Better Home is the first step from a market currently driven by on-off subsidy schemes for specific energy efficiency measures towards a more professional market for energy efficiency.

The industry supports and invests in this initiative that started in Denmark but has also been rolled out in Sweden.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In connection with the launch of Bedre Bolig, DKK 15 million has been allocated to the launch of a special information campaign (NEEAP, 2017).

It is difficult to provide a clear indication of whether the Bedre Bolig scheme promotes energy innovations among Danish homeowners (Niras, December 2016). In the three years that the Bedre Bolig scheme has existed, there has not been a general positive development in the proportion of Danish homeowners who are energy-innovating. There is no evidence that Bedre Bolig has led to a significant increase in energy innovation of Danish households as a whole at present.

In the evaluation of the Bedre Bolig programme in 2015 and in 2016, overall satisfaction was expressed related to the training offered in the framework of the Bedre Bolig scheme. The companies confirmed that they were able to provide better advice after having followed the training. The market for Bedre Bolig consulting is relatively concentrated on a few companies, the 3-4 largest companies perform the vast majority of the advisory tasks. According to the evaluation, many homeowners state that the ability to receive a grant from their municipality, typically to cover 50%

of the cost, was sufficient to incentivise them to request Better Home advice (66%). The report also points out that the dialogue with the advisor has an impact on the homeowner's decision around renovation. More than other homeowners, Better Home participants have insulated pipes, basements, floors and hollow walls, and they have more installed heat pumps and solar collector/solar systems.

Better Home has a network of 3,500 installers; they work closely together with the top five banks in Denmark and four utility companies (BUILDUP webinar, 6/11/2017). Since the model was launched in 2014, it was profitable after just three years, with 200 projects in 2016, and is expected to continue its growth. The indirect turnover of Better Home amounted to EUR 13 million in 2017. The dashboard for one-family houses had more than 28,000 unique visits in 2016. Approximately 4% of these visits resulted in a further lead. The average size of a refurbishment project is EUR 70,000 and energy savings range between 30%–70%.

Based on the experiences with energy renovation in residential buildings within the Better Home initiative, it is recommended to:

- use innovative tools at the supply side, so building professionals can make the renovation process more efficient for themselves and homeowners.
- align with existing stakeholders on the market, including banks and mortgage providers.
- use digital solutions to become more consumer-centric and service-oriented and, as such, bring added value to the end user.
- build awareness for end users by training the installers to sell the broader picture, including financial benefits and improved health and comfort, as well as climate and environmental benefits. The installer is not only replacing building elements but is above all creating a healthy and comfortable living environment.
- safeguard the good reputation of the initiative, and as such improve reputation of installers.

The industrial partners (Velux, Grundfos, Danfoss, Rockwool, Velux) attribute the success of the Better Home initiative to the following factors:

- clear policy framework (Danish Strategy for energy renovation of buildings of 2014),
- good relationship between the founders – mutual trust and readiness to share the risks,
- digital platform,
- comfort as a driver,
- link to financial partners.

Source: Hovedrapport - Evaluering af SparEnergi (Opinion) (January 2016)

Specific measure: sparenergi.dk (communication and information platform)

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The overall evaluation shows that SparEnergi works well in its current form and that it contributes positively to promoting energy savings in total among households and public and private companies in Denmark. In general, existing and potential users consider the website to have relevant content of high quality. The evaluation shows that 25% of Danes have knowledge of SparEnergi. The analysis shows that 2.5% of the Danes use SparEnergi in connection with their work (including both private and public employees).

Source: EEA database on climate change mitigation policies and measures in Europe (last update: 16/11/2017); Energy Efficiency trends and policies in Denmark (Odyssee-Mure & Danish Energy Agency, October 2016)

Specific measure: Energisparesekretariatet (the Energy Saving Secretariat)

SHORT DESCRIPTION: The Energy Saving Secretariat, established by the Danish Energy Agency in 2014, promotes energy savings in private enterprises, particularly small and medium-sized enterprises. The large companies are covered by the mandatory energy audit.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: For the period 2014–2017, DKK 40 million (EUR 5.4 million) was allocated to run the Secretariat.

Source: LED-kampagne – Energistyrelsen[36] (Nauntofte Caroline, Troelsgaard Martin, Advice) (July 2017)

Specific measure: LED campaign retail sector (2016)

SHORT DESCRIPTION: The Energisparesekretariatet (the Energy Saving Secretariat), established by the Danish Energy Agency in 2014, promotes energy savings in private enterprises, particularly small and medium-sized enterprises. In 2016–2017 the Energisparesekretariatet launched a campaign on LED lighting in the retail sector. During this campaign the Danish Energy Agency's LED consultants visited small and medium-sized stores in 39 municipalities and explained directly to the store owners the potential savings that could be made by switching to LED lighting. The LED consultants made short, resource-efficient visits, by quickly mapping the store's saving potential on lighting. As such, the shopkeeper got concise information and was motivated to shop on. At the same time, it was an advantage that the consultants did not need the same thorough education as, for example, energy consultants, and thus the consultants could provide a less costly performance assessment.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The campaign was granted DKK 1.8 million in 2016 and DKK 235,000 in 2017.

After the LED consultant's visit, 29% of the stores contacted an electrician to get a specific offer and 24% of the stores considered contacting an electrician after the visit. In 47% of the stores, potential energy savings were found (both traditional lighting and in combination with fluorescent tubes) while 33% of the stores had already switched to LED.

80% of the shopkeepers were satisfied or very satisfied with the visit from the LED consultants.

75% of the shopkeepers acknowledged that the advice offered them a realistic picture of what they could save by switching to LED.

The use of social media (e.g. sharing videos of store visits with shopkeepers on Facebook) during the campaign was considered very cost effective in getting the campaign message to the target group.

The average energy cost saving, on the basis of the 800 reports posted by the LED consultants, is DKK 31,051 over seven years with a kWh price of 90 øre. The potential energy cost saving on a national level from switching to LED lighting in the retail sector is estimated to be more than DKK 249,136,580 over seven years (with 17,148 SMEs nationwide and a saving potential in 47% of the visited stores).

There is a potential reduction of national CO_2 emissions of 53,310 tonnes over seven years.

Source:
Evaluering af Videncenter for energibesparelser i bygninger - konklusion fra spørgeskemaundersøgelse[37] (Center for Klima og Energiøkonomi) (June, 2015);
Odyssee-Mure database (October 2014);
Good practice package for buildings in Denmark – Policy Guide[38] (BigEE) (2013)

Specific measure: Videncenter for Energibesparelser i Bygninger (Knowledge Centre for Energy Savings in Buildings, VEB)

SHORT DESCRIPTION: The Knowledge Centre for Energy Savings in Buildings (VEB) offers building constructors and Advisors, and their professional organisations, information and education on how buildings can be made more energy efficient. The VEB is financed by a public grant.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: An evaluation was carried out in the beginning of 2012. It is however difficult to quantify the energy savings that resulted from collecting and disseminating knowledge by the VEB. In the evaluation, familiarity with the VEB was examined among 175

[36] https://sparenergi.dk/forbruger/materialer/evaluering-af-led-kampagne

[37] https://www.byggeriogenergi.dk/om-videncentret/evalueringer/

[38] http://www.bigee.net/en/policy/guide/buildings/package/14/#gpp-specific-measures

craftsmen and it showed that 58% of them were familiar with the services of the VEB (Odyssee-Mure database, October 2014).
In 2015 a survey was carried out by the Danish Energy Agency in cooperation with KommunikationsKompagniet and NIRAS to evaluate if the VEB users were satisfied with the services offered. The survey showed that users were very satisfied with the quality of VEB services. In addition, a significant number of users reported that the VEB's services were relevant to their business activities. Organisations, visitors to the website and readers of the newsletter used various materials and services offered by the VEB. "Energy Solutions" was used the most, and "Phone and mail support" was used the least (Center for Klima og Energiøkonomi, 2015).
The VEB receives a budget of DKK 10 million per year (EUR 1.3 million per year) (Source: BigEE, 2013).

Source: EEA database on climate change mitigation policies and measures in Europe (last update: 16/11/2017)

Specific measure: Electricity Saving Trust (expired) (1997 – 2012) (not in the NEEAP 2017)

SHORT DESCRIPTION: The task of the Electricity Saving Trust included the promotion of efficient electric appliances, etc., and electric heating conversion in the residential and public sector. The Trust made use of measures such as national campaigns and voluntary agreements.
LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The budget was approx. DKK 90-100 million annually.

Source: Implementation of the EPBD in Denmark – Status in December 2014 (Kirsten Engelund Thomsen, Kim B. Wittchen, Danish Building Research Institute (SBi), Aalborg University; Birgitte Ostertag, Niels Bruus Varming, Leise Thers Egesberg, Troels Hartung, Danish Energy Agency) (2016)

Measures: energy efficiency policies in general

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Since the transposition of the EPBD Directive 2010/31/EU in 2012, a large effort has been made by the Danish Energy Agency and others to raise public awareness on energy use in buildings. Information campaigns, web-based interactive tools, etc., have been widely initiated and public awareness on energy use in buildings has risen considerably. Denmark has succeeded in making the EPC visible, rendering it a clear sales parameter in the market.

ESTONIA

→ **Information measures**

Source: Implementation of the EPBD in Estonia, 2014

Measure: Implementation of the EPBD in Estonia

SHORT DESCRIPTION: The report gives an overview of the current status of implementing and improving EPBD in Estonia. A national energy week is organised once a year by KredEx fund, the Ministry of Economic Affairs and Communications, and Tartu Regional Energy. The KredEx fund has also carried out several information campaigns, which were mostly targeted at apartment buildings. The campaigns have been organised yearly in order to inform tenants about energy saving measures and support provided by the state. The Estonian Technical Surveillance Authority has conducted an information campaign about the requirement to add information about the EPC to the property rental or sale advertisement. The information channels used to disseminate the information were TV, radio, print media, internet and street advertisements. As a result of these campaigns, energy saving activities have been initiated. In conclusion, Estonia will continue to conduct information and awareness raising campaigns in order to improve the knowledge of citizens, building owners, designers and other specialists.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Information campaigns on raising public awareness for energy efficiency and energy certification systems are at a good level. People generally ask for EPC when buying or renting a building.

Source: Website Kredex[39] & Odyssee-MURE database[40] (last update March 2017)

Measure: Estonian Credit and Export Guarantee Foundation KredEx

SHORT DESCRIPTION: Estonian Credit and Export Guarantee Foundation KredEx was founded in 2001 by the Ministry of Economic Affairs and Communications to improve financing possibilities of enterprises, manage credit risks connected with export, enable people to build or renovate their home and stimulate energy efficiency awareness via dissemination of energy efficiency-related information.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: KredEx has become an important link between the Estonian financing institutions and loan applicants, exporters and foreign buyers.

KredEx plays an important role in the following energy efficiency-related activities:

- Improving people's awareness on energy efficiency and promoting energy saving measures via media campaigns, etc. Details on information campaigns and materials published have been provided to final customers through companies dealing with energy and building management (e.g. via the energy and utility bills of heating companies and building management companies).
- Organising annual energy weeks. Opportunities are offered to interested organisations for organising information events. All information is gathered on the webpage www.energiatark.ee. Each year, events organised during the energy week have had as many as several thousand participants, and events have been organised by dozens of companies and organisations.
- Offering financing services, managing financial risks, and implementing the development plan of the Estonian housing sector. KredEx offers solutions based on the strengths of all interested parties, coordinating and supporting the relevant development activities, first of all through

[39] http://kredex.ee/en/kredex/tutvustus/

[40] http://www.measures-odyssee-mure.eu/public/mure_pdf/household/EST13.PDF

state guarantee, as well as knowledge and skills. The vision of KredEx is to offer financing solutions based on the best practices of the world.

Source: Odyssee-MURE[41] (last update March 2017) & NEEAP2017; Ministry of Economic Affairs and Communications, May 2017

Plan: National Development Plan for Housing Sector 2008-2013 & National energy development plan 2030 ENMAK

SHORT DESCRIPTION: The information and training measures targeted at the housing sector in Estonia were part of the umbrella programme **"National Development Plan for Housing Sector 2008–2013".** One of the objectives in the plan is to improve the quality and sustainability of the housing stock in Estonia. The measures for reaching this goal include:

- support for refurbishment of apartment buildings: securing targeted loans for dwelling houses built before 1993; special soft loans for houses built before 1940;
- elaboration of standard design documentation for refurbishment of apartment buildings built after 1945, and making these documents available free of charge;
- special awareness campaigns and training courses for better maintenance and refurbishment of housing stock;
- mapping of the current state of the housing stock, focusing on constructional and energy performance issues of apartment buildings.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In the final report on the results of the Plan, the Ministry of Economic Affairs and Communications (MoEAC) states that several targets, including energy efficiency-related ones, had not been reached, mainly due to limited resources from the State budget. The major activities and results related to awareness raising and training in the housing sector were:

- information campaigns to disseminate information on energy-efficient renovation of residential houses – 10 events (budget of EUR 0.45 million, financed from the European Regional Development Fund ERDF);
- training for maintenance personnel in the housing sector (budget of EUR 0.46 million);
- grants (EUR 2.11 million) for 2,693 energy audits were awarded.

In October 2016 the Estonian Government approved the new "**National energy development plan 2030"** (ENMAK: Eesti pikaajaline energiamajanduse arengukava 2030+; https://energiatalgud.ee/index.php?title=ENMAK:Eesti_pikaajaline_energiamajanduse_arengukava_2030%2B). In elaborating the new energy development plan, various energy scenarios have been assessed with time horizon 2030, including scenarios that take into account changes in energy efficiency awareness and know-how.

→ **Training measures**

STEEEP Final Report[42], co-funded by IEE, 2016

Measure: STEEEP – Support and Training for an Excellent Energy Efficiency Performance (Intelligent Energy for Europe Programme)

SHORT DESCRIPTION: The aim of the STEEEP project was to reduce participating SMEs' energy consumption through tailored training and guidance on effective energy management tools. Notably, 600 cross-cutting SMEs from 10 countries were trained by energy advisors from Eurochambres and 36 Chambers of Commerce and Industry (CCIs) in implementing energy efficiency measures.

[41] http://www.measures-odyssee-mure.eu/public/mure_pdf/household/EST17.PDF

[42] http://www.steeep.eu/assets/Uploads/STEEEP-Final-pusblishable-report.pdf

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: As a result, the participating SMEs were able to reduce their energy consumption by 10 to 15%, as well as kick-start the process of getting an energy management system in place (ISO 50001) and invest in energy saving measures. 91% of the SMEs adopted an energy management plan (EMP). A cumulative investment of 5M EUR was made within the timeframe of the project (2014-2017) for the implementation of energy efficiency measures in Austria, Belgium, Estonia, France, Hungary, Latvia, Italy and Spain.

Important lessons learned during the project:

1) Many steps make a mile: supporting SMEs by organising energy audits and workshops increases SMEs' energy-efficiency awareness and produces a reduction in their energy use. Workshops and training sessions must be aligned with the maturity and autonomy of the companies. Individual support has to be provided beforehand, to avoid thematic workshops not being tailored to the SME's know-how.

   The STEEEP experience has also shown that it takes time before companies become autonomous in the control of their energy use. While the consortium thought it was enough to advise companies by identifying actions and providing tools, companies also needed support during the implementation phase.

   This implies step-by-step support, and therefore the CCIs are increasingly proposing tailor-made courses, taking into account the maturity and resources of the companies.
2) Role of the multipliers: involving stakeholders such as industrial park managers, business and environmental associations, and universities contributed to the SMEs' involvement in the project and the dissemination of information about the project's activities.

Notwithstanding the successful examples, the experience gained from STEEEP has shown that significant barriers exist.

1) Although energy efficiency is gaining attention, the majority of SMEs are not fully aware of the added value and the co-benefits. Especially in the manufacturing sector, information campaigns should underline the positive effect of energy efficiency measures on productivity.
2) Support the collection of energy data: Benchmarking is an important factor in evaluating potential improvements and setting clear efficiency targets. Comparisons with sector frontrunners act as strong incentives. The use of energy monitoring software should be encouraged to facilitate this. Utilities should provide free access to high-frequency energy use data to enable consumer intervention when changes occur in energy use patterns. Companies need individual assistance in collecting and assessing information on energy-efficient technologies and practices, in monitoring energy use and in increasing their know-how. So, therefore, it is important to bring together an extensive network of actors, combining the required expertise. Chambers of Commerce and Industry act as trusted intermediaries between such actors and the SME end beneficiaries.

FINLAND

Source:
Finland's National Energy Efficiency Action Plan NEEAP4, 2017;
Effective information measures to promote energy use reduction in EU Member States, JRC Science for Policy Report, 2016

Measure: Motiva

SHORT DESCRIPTION: Awareness-raising, information provision and training programmes are usually managed by Motiva, a company acting on behalf of the Finnish government and managing most of the communication projects. Motiva's turnover amounted to EUR 6.5 million in 2016 (unconfirmed), and Motiva employed 64 people at the end of 2016. The Energy Authority (until the end of 2013, the Ministry of Economic Affairs and Employment) commissioned an annual work programme from Motiva, primarily concerning the promotion of energy efficiency (about EUR 2.7 million in 2017). Other energy efficiency work undertaken by Motiva on commission from the central government amounted to approximately EUR 1.6 million in 2016 (Source: NEEAP Finland 2017). Motiva's services support the central government in the implementation of the National Energy and Climate Strategy and the EU Directives, such as the Energy Efficiency Directive, the Energy Performance of Buildings Directive, the Ecodesign Directive and the Renewable Energy Directive. Services are offered to local governments, businesses, non-governmental organisations and consumers. At national level, Motiva coordinates the provision of energy advice for consumers and mobility management, and runs an advice service on public procurement. At regional level, Motiva manages a network of consultancy organisations, providing targeted advice to households and companies. Another important task is to monitor the progress of measures and to assess their impacts (Source: NEEAP 2017 Finland; Effective information measures to promote energy use reduction in EU Member States, JRC Science for Policy Report, 2016).

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Motiva communicates via a variety of channels: websites, campaigns, publications, seminars, exhibitions and networking events. Communication is increasingly becoming electronic, while use is being made of the social media. Motiva strives to activate and provide the media with services for communications purposes. A total of 64 press releases were issued in 2016. A total of 16 new publications were released, one of which was a reprint. A total of 13 publications were added to the energy efficiency agreements reporting series. They released almost 36,900 printed publications and 324 website publications. Websites developed and administered by Motiva had around 1.1 million visits in 2016.

→ **Information measures**

Source: The Finnish Recipe to Energy Efficiency[43], Irmeli Mikkonen, Group Leader/Consumer Choices, IEA Energy Efficiency and Behaviour Workshop, 11–12 March 2015

General: increase awareness on energy efficiency – general lessons learned

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The following ingredients are considered important in the Finnish approach to increase energy efficiency awareness:

1. Stakeholder cooperation at all levels: i.e. municipalities, energy companies, government & ministries, NGO's and practitioners:

- Consultation of different stakeholder groups during strategy development and implementation;
- Joint projects of companies and organisations;
- Networking & campaigns.

[43] https://www.iea.org/media/workshops/2015/eeuevents/behave1103/S5Mikkonen.pdf

2. The importance of repetition of the energy efficiency message: given the changes that consumers experience as well as the changing policies & regulations, it's important to repeat the energy efficiency messages, by organising annual campaigns and relaunching the messages during the most relevant seasons (such as heating and cooling seasons, reminding drivers to prepare for winter season, etc.).

Source:
Finland's National Energy Efficiency Action Plan NEEAP4, 2017;
Website Energy efficiency agreements 2008–2016[44];
Energy advice services for customers – Energy savings calculations for Finnish Article 7 notification[45], Ulla Suomi, Motiva Oy, CA EED Plenary Meeting in Athens, CT8 session 28/3/2014

Measure: energy efficiency agreements for businesses – Energy Services Action Plan & Höylä

SHORT DESCRIPTION: Finland's extensive energy efficiency agreement scheme for 2008−2016 was initially aimed at achieving the 9% energy saving target for 2016, as laid down in the Energy Services Directive. These voluntary energy efficiency agreements schemes, which expired at the end of 2016, and the new voluntary energy efficiency agreements, negotiated for 2017–2025, play an important role in the implementation of the binding energy saving target laid down in Article 7 of the Energy Efficiency Directive. The revised energy efficiency agreement scheme covers multiple sectors (industry, energy and private services), local government, the property sector and the oil industry (Source: NEEAP2017 of Finland).

Via a web-based monitoring system, businesses and organisations that have signed the energy efficiency agreement submit annual reports on their energy consumption, energy saving measures implemented and progress with their other contractual obligations.

In addition to improving the efficiency of their own energy use, energy distribution and retail companies that joined the Energy Efficiency Agreements committed to also provide energy advice to their final customers: Energy distribution and retail companies provided advice to their customers at their own service points, by phone, email, at various stakeholder events and on their websites. Advice was provided actively by the participating companies and it reached the majority of their customers. Companies distributed information on energy savings to their customers and provided schools with free teaching materials. They have also been active in promoting energy savings in their customer magazines, which are reaching almost all Finnish households several times a year (Source: Website Energy efficiency agreements 2008–2016).

The **Energy Services Action Plan** is one of the action plans included in the Energy efficiency agreement for businesses. For participating businesses, the Action Plan includes goals and obligations related to both their own energy consumption and that of their customers. The most popular soft measures that the Finnish utilities provide to their customers to raise the awareness and to promote the efficiency of the end use of energy targeted at customers include:

[44] https://energyefficiencyagreements2008-2016.fi/opastusta-ja-neuvontaa-kayttajille

[45] https://www.ca-eed.eu/content/download/6267/file/2.%20Measuring%20savings%20energy%20advice%20-%20Finland.pdf

Source: Energy advice services for customers – Energy savings calculations for Finnish Article 7 notification, Ulla Suomi, Motiva Oy, CA EED Plenary Meeting in Athens, CT8 session 28.3.2014https://www.ca-eed.eu/content/download/6267/file/2.%20Measuring%20savings%20energy%20advice%20-%20Finland.pdf

On top of this, the **Höylä II agreement** aims to achieve a saving of at least 9% of the consumption of heating oil between 2005 and 2016. The agreement promotes the maintenance of oil-based heating systems, boiler replacements and other energy-efficient repairs in buildings. The Höylä IV energy efficiency agreement 2017–2025 continues the aforementioned activities. With regard to the implementation of the agreement, the participants provide comprehensive training, advice and information to their customers. The measures mainly involve communications at trade fairs and events, and advice on energy efficiency improvements in a customer magazine targeted at all oil-heated properties.
In addition, the **Höylä III agreement** promotes regular inspections of heating boilers and the training and certification of inspectors, in line with Article 8 of the Energy Efficiency Directive.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The so-called soft energy efficiency measures in the Energy Services Action Plan were estimated to save 1–3% of the target group's energy consumption (Measuring and evaluating the soft energy efficiency measures, 2012, conducted by the branch association Finnish Energy Industries with Motiva[46]). The estimated saving was 2.5% of households' energy consumption (electricity, district heating and light fuel) and only 1% of energy consumption (electricity and district heating) of other target groups.
The target group included household consumption of electricity and district heating, as well as an additional 10% of the corresponding energy consumption of industry (small industrial organisations), one third of the corresponding energy consumption of services, and one half of that of agriculture and forestry.
To estimate the total savings related to soft measures implemented by the energy companies within the Energy Efficiency Agreement (voluntary agreements), the following assumptions were made within the context of Finland's Article 7 notification:

- Total energy consumption in different consumer groups for electricity and district heating in Finland (based on Statistics Finland);
- Coverage of the Action Plan for Energy Services of the total energy consumption (%) that is not overlapping other agreements and/or action plans;

[46] http://energia.fi/files/1225/Pehmeiden_energiatehokkuustoimien_vaikutusten_mittaus_ja_arviointi.pd

- Share of energy sold and distributed by the participating companies in the Action Plan for Energy Services of Finland's total electricity and district heating consumption (gathered via Energy Efficiency Agreements annual reporting);
- Providing soft measures by participating companies to their customers is continuous, i.e. lifetime of the savings in cumulative EED calculations is one year and every year there will be new savings made.

So, the resulting cumulative energy savings for end-use of the above-described soft measures, namely the Energy Services Action Plan and Höyla II, as notified under Article 7 in the NEEAP2017 are:

- 3,393 GWhcum in 2014-2016;
- 4,419 GWhcum in 2017-2020;
- 7,813 GWhcum in 2014-2020.

Source: Finland's National Energy Efficiency Action Plan NEEAP4, 2017

Measure: energy advice for consumers

SHORT DESCRIPTION: Energy advice targeted at consumers has been developed in connection with the implementation of the National Energy and Climate Strategy, the Consumer Policy Programme and the Government Resolution on energy efficiency. According to the Government Resolution (of 4 February 2010), "an energy advice system for consumers will be adopted and a national coordination centre appointed to run the activities". The goal is to use reliable energy advice as a means of encouraging consumers to use energy more efficiently and to increase their use of renewable energy sources, which will help to reduce greenhouse gas emissions. The Finnish Ministry of Economic Affairs and Employment appointed Motiva Ltd as the national coordinator and developer of energy advice in December 2010. The 24 pilot projects carried out in different parts of Finland in 2010 and 2011, the external evaluation performed on consumer energy advice services in the autumn of 2011, and the regional consultancy services launched in 2012 have created a solid foundation for the system. Mid 2016, Visio2022 was appointed to improve the advisory services, in cooperation with the steering group and the advice network. The aim was to provide as much advice as possible from a single source, covering everything from housing to transport, purchases, renovation and construction. This principle was supported by the eneuvonta.fi website. Advice was not given on which appliances to choose, nor did advisors provide detailed design services or consultancy. In addition to the website, various parties provided regional consultancy in different parts of the country.

The methods used to provide advice and disseminate information vary (one-to-one advice, targeted seminars, consultancy workshops, etc.). The energy advice website is closely linked to other websites and online services, and includes contact details for regional consultancy providers. There is a national steering group for coordinating the provision of advice, which includes representatives of the Finnish Energy Authority and the Finnish Ministry of Economic Affairs and Employment, as well as the Finnish Ministry of the Environment, the Finnish Ministry of Transport and Communications, the Finnish Ministry of Agriculture and Forestry, the Association of Finnish Local and Regional Authorities and Finnish Energy Industries. Operators providing advice are part of networks and can access online training and advice material. Cooperation with established sector-specific consultancy services (e.g. mobility management, renovation – see measures below) continues. The most important of these include Advice on renovations (Ministry of the Environment) and the smart mobility network, Vili (Finnish Transport Agency), coordinated by Motiva.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: At the end of 2016, advice was available in 11 different regions and some of the providers had a long history of acting as regional or local energy offices. In 2016, some 50,000 consumers searched for information via the online portal. Between 2011 and 2014, approximately EUR 1 million a year was allocated for the provision of energy advice for consumers. The budget for 2015 was EUR 290,000, and EUR 250,000 for 2016 and 2017.

Source: Finland's National Energy Efficiency Action Plan NEEAP4, 2017

Measure: mobility management

SHORT DESCRIPTION: The energy efficiency of the transport sector is promoted at national level by means of mobility management. Mobility management is a means of controlling demand for transport, which is aimed at reducing private car use and increasing forms of transport that are better for the environment and society. Local mobility management development projects were funded through a joint R&D funding programme by multiple funding agencies in 2010–2013. In addition, the Finnish Transport Agency granted state aid to regional councils and local governments in 2012, in order to promote operating models and forms of cooperation related to mobility management. The Finnish Transport Agency commissioned Motiva to support networking and communications related to the projects. The mobility management network (LIVE), currently known as the smart mobility network (VILI), was established to increase cooperation and the exchange of information. VILI has some 550 members. VILI links Finland to the international EPOMM (European Platform on Mobility Management) network, and the Finnish Transport Agency has been a member since 2010. Motiva acts as Finland's national EPOMM point of contact.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: EUR 210,000 had been reserved in 2016 for national coordination to promote mobility management (and EUR 270,000 in 2014). A further approximately EUR 950,000 (EUR 500,000 in 2014) could be allocated to mobility management through state aid to regional councils & local governments.

Source: Finland's National Energy Efficiency Action Plan NEEAP4, 2017

Measure: advice on renovations

SHORT DESCRIPTION: As part of the action plan for implementing the National Renovation Strategy, the Finnish Ministry of the Environment has been hosting and developing an informative website at www.korjaustieto.fi since 2011. The website contains renovation tips for housing associations and owners of detached houses, information on the services of public authorities and contact details for providers of renovation advice and consultancy. The information on the website has been compiled by experts and is aimed at residents, property owners, housing associations and property management professionals. The provision of renovation advice involves disseminating scientifically proven information and practical experience on different areas of property management and renovation. It is not about providing engineering services or professional consultancy.

Source: Finland's National Energy Efficiency Action Plan NEEAP4, 2017

Measures: standardised communications and awareness raising campaigns

SHORT DESCRIPTION: consistent communication and advice are needed in order to achieve energy efficiency improvements in practice. One approach is to organise events at the same time each year, such as Energy Saving Week and Mobility Week. Each year, the National Energy Saving Week takes place during the second week of October.

The objective of **Energy Saving Week** is to disseminate information on recent developments relating to energy efficiency and to share energy saving tips with businesses, non-governmental organisations, local governments and consumers. There is no fixed format for the Energy Saving Week.

International Mobility Week is celebrated between 16 and 22 September each year. The Mobility Week is designed to encourage people to pay more attention to their daily choices of forms of transport and the effects of such choices on the environment and society. Motiva coordinates Mobility Week in Finland as part of its mobility management work. This includes liaising with

domestic stakeholder groups and the European network, as well as marketing the event across Finland.

Regular annual campaigns targeted at children include **Year 2 Energy Saving Week** (www.heikaikkitoimii.fi), which has been organised every autumn since 1996. Almost 50% of all Year 2 groups in the country participate. Several energy companies contribute to organising the event. In some areas, energy companies organise an "**Energy in Finland**" school event for 9th-graders and teachers (www.energiaasuomessa.fi).

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Some output performance indicators: In 2016, 386 organisations took part in Energy Saving Week. Visibility on Facebook amounted to 251,000 visits, which included 17,000 viewings of video downloads or picture animations. Between 20 September and 16 October, the number of commitments was 5,500 (like, share, comment). Twitter impressions related to the Energy Saving Week totalled 117,000 (www.energiansaastoviikko.fi). In 2016, 27 municipalities and cities took part in Mobility Week. (www.liikkujanviikko.fi)

Source: Energy Efficiency Policies in Europe - country report Finland, Energy Efficiency Watch Project[47], Co-funded by IEE, 2016

General:

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Experts consider, in general, the policy of Finland very ambitious or at least ambitious across most sectors. The voluntary agreements in all sectors are also considered a great strength of the Finish energy efficiency policy as they have a long history and have had successful results up to now.

→ **Training measures**

Source: Energy efficiency trends and policies in Finland (Motiva, 2015)

Specific measure: eco-driving training for professional qualification: buses, lorries and coaches: basic training and further training (2008–ongoing)

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Motiva reports that eco-driving has become a popular training course, though its effect is also reinforced by the European Directive on professional competence of truck and bus drivers. The programme is responsible for 598 GWh/a energy savings for the three categories – passenger cars, busses and trucks.

MEASURE	Energy savings 2010 GWh/a	Estimate 2016 GWh/a	Estimate 2020 GWh/a
Energy efficiency of new passenger cars	707	1 900	3 600
Eco-driving, passenger cars	186	241	271
Eco-driving, busses	43	55	53
Eco-driving, trucks	121	277	274
Promotion of public transport	38	40	100
Promotion of walking and cycling	38	190	460
Wintertime speed limits	165	165	165

Source: Energy efficiency trends and policies in Finland, 2015

[47] http://www.energy-efficiency-watch.org/fileadmin/eew_documents/EEW3/Country_Reports_EEW3/Finland/Country_Report_Finland_FINAL.pdf

Source: BUILD UP Skills Finland 2013-2016[48] (2016) & BUILD UP Skills FINLAND Factsheet 2013-2016 [49]

Specific measure: BUILD UP Skills Finland 2013-2016

SHORT DESCRIPTION: The main objective of the BUILD UP Skills project was to share best practices between construction trainers and employees regarding energy efficiency, revise training material for trainers, create a teacher training scheme, conduct pilot training to find the best approach and finally enhance the trainers' competence.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS:

Good practices:

- The involvement of key stakeholders, particularly through the constitution of a Strategic Advisory Group of public authorities and representatives from the construction and training sectors;
- Investment in training material is essential to convey the message in the most comprehensive way. Training schemes for teachers as well as for on-site workers were developed by testing the training materials and by applying innovative and tailored approaches in pilot training. Teachers' training schemes complement and update their competence constantly. Materials in different formats ensure wider adoption and acceptance for use.
- The presence of an on-site training ambassador in charge of contacting construction companies and training institutions was successful, and construction companies were keen on sending workers to pilot training.

The results and the impact of the BUILD UP skills project in relation to the initial objectives and key indicators are listed below:

Project Common Performance indicators[7]				
Common Performance Indicators	Ex ante target	Interim results	Final result	Target 2020
Number of training courses triggered by the action	4	1	5	960
Number of people that will be trained	70	15	93	16800
Number of hours taught in the frame of the courses triggered	42	12	56	10080
Estimated specific cost to qualify each trainee	170 euro/trainee	200 euro/trainee	160 euro/trainee	170 euro/trainee + price index changes
Renewable Energy production triggered	2400 toe	n/a	3000 toe	8700 toe
Primary energy savings compared to projections	6300 toe	n/a	8200 toe	22000 toe
Reduction of greenhouse gas emissions	17000 tCO2e/year	n/a	22000 tCO2e/year	60000 tCO2e/year

[48] https://www.motiva.fi/files/12934/BUILD_UP_Skills_Finland_2013-2016_Report.pdf

[49] http://www.buildup.eu/sites/default/files/bus_factsheets/factsheet_finland_0.pdf

ITALY

→ **Information measures**

SHORT DESCRIPTION: Most of the information measures mentioned in the NEEAP of 2017 are part of the dissemination programme **"Italia in Classe A"**, a specific three-year information and training programme PIF**.** This was designed by the Italian National Agency for new technologies, energy and sustainable economic development (ENEA), involving various parties such as Regions, consumer associations, ESCOs and ESCO associations (Source: NEEAP2017, June 2017 & Analysis and results of energy efficiency policies in Italy[50], ENEA, 2017). An in-depth analysis of the economic, social and regulatory climate identified the main issues that hamper the implementation of policies and that can be addressed through appropriate communication, targeting the parties concerned. The information and training activities that are carried out under the programme "Italia in Classe A" are intended to widely disseminate information on energy efficiency, raise awareness and provide tools. These activities are targeted at end users in various sectors**,** such as large companies, SMEs, public administrations, families, students and banks.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The programme is divided into three different stages, each lasting one year:

- **Stage 1. Start-up** (first year - 2016): involved **mass information/communication** to provide a basic introduction to energy efficiency. Targeted actions are planned for selected recipients.

1. Prime-time television broadcasts: the campaign aired for two months, involved 29 television programmes and reached an average audience of more than 500,000 viewers. Overall, it generated 55 million gross contacts, the equivalent of the Italian population.
2. 'Energy Efficiency Month': more than 400 participants took part by organising around 270 events nationwide. Considering the vast target market of some of the stakeholders involved (e.g. Italo, ACEA, ENEL), the overall impact of the initiative was estimated at about 12 million end users, reached through live events and online via websites and social media (Facebook, Twitter, Instagram). As a result of its success, the Energy Efficiency Month is an annual event.
3. Participation to Forum PA: three days of information activities targeted at public servants on energy efficiency improvements of public buildings, energy service contracting and new technical support materials/tools. Particular attention was paid to raise awareness about energy saving opportunities through behavioural change. Considering the very encouraging results and the positive feedback received, participation in FORUM PA was scheduled also for the second and third year of the ITALIA IN CLASSE A programme.
   Some output performance indicators: 150 participants at the launch event; 585 attendees at the 12 organised seminars; 25 press articles; 1,500 visitors – website "Italia in Classe A" during the event; 2,700 post views – Facebook page; 500 distributed "Italia in Classe A" brochures during the event.
   Note: FORUM PA is the most important annual event, lasting 3 days, dedicated to technological and organisational innovation of the Public Administration, hosting more than 17,000 visitors. An "Italia in Classe A" stand was set up, which hosted PA managers and technicians, who participated with great interest in a cycle of 12 different seminars and obtained explanations and technical/regulatory advice through one-to-one meetings.
4. Communi in Classe A: the Italian Network of Local Energy Agencies (RENAEL) joined the Classe A campaign, becoming the promoter of many local events (workshop, seminars, etc.) targeted at public and private managers, professionals, citizens and students. Some output performance indicators: 1,000 direct contacts (i.e. participants in the events); 12,000 users reached (web portals and social networks).

[50] http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/raee-executive-summary-en.pdf

5. #CinemainclasseA: awareness campaign "#CinemainclasseA"" aimed at the use of cinematic means to explore energy saving issues. The campaign was carried out in collaboration with GREEN CROSS Italia and its "Green Drop Award" i.e. a collateral prize of the Venice International Film Festival, assigned to films that represent best the values of ecology and sustainable development. Some output performance indicators: from 1 September 2016 to 31 January 2017 there were over 750,000 Twitter followers. Moreover, during the live tweeting at the conference day in Venice, #CinemainclasseA was Twitter trend number 1.
6. Premio Energia Intelligente – Journalism competition: The main objective of the competition (June-December 2016) was to solicit professionals involved in communication (journalists, illustrators, photographers, cartoonists) to use their professional skills to raise awareness on energy efficiency in the private and public sector, in industry, transport, construction and services sectors. Before the launch of the competition, in April 2016, two training events were organised targeted at the journalists – the first one in Milan, in collaboration with the Order of Journalists of Lombardy and the Authority for Electricity, Gas and the water system, and the second one in Rome. Some output performance indicators: 200 products collected (articles, photos, short videos, etc.); 6 of the most widely read newspapers in Italy published articles on energy efficiency that reached about 10 million readers.
   An initial general impact assessment of the actions taken during the first year of the information and training programme was carried out by analysing big data obtained from web searches by users using commercial browsers (Google trend searches). A comparative analysis showed that between September and December 2016, there was a significant increase in the number of searches for all keywords, suggesting that the campaign had an impact on awareness and interest in certain topics. In some cases, by analysing these trends over a two-year period, it emerged that there was a renewed interest in certain technologies (such as heat pumps and condensing boilers) and incentive mechanisms such as the Thermal Energy Account, as well as specific instruments such as the energy performance certificate.

- **Stage 2. Specific targets** (second year - 2017): the midpoint of the programme, which was aimed at **maximising information coverage** and launching **targeted actions for the recipients** identified under Article 13 of Legislative Decree No 102/2014. Therefore, the programme for 2017 mainly focused on the configuration, implementation and promotion of macro-projects to facilitate and boost communication, thus overcoming the main problems and meeting the information needs of the different target groups. Hereto, the second year's operational programme was divided into four macro-projects for specific target groups (schools, SMEs and banks, the public administration, and households living in condominiums) and four horizontal multi-target actions (e.g. the Energy Efficiency Month).
  ENEA also indicated that the operational plan implemented in 2017 was structured in terms of gradualness, flexibility, monitoring and constant verification of the achieved results (Source: Annual report Energy Efficiency[51], ENEA 2018, Executive Summary http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/2018/raee-2018-executivesummary-en.pdf).
  Some performance indicators: on the official Facebook page of Italy in Class A, from the beginning of October 2017 to 10 April 2018, the timeline deliveries of the posts were about 1,200,000, over 640,000 people reached (half of them in the age group ranging from 25 to 44 years) and over 23,000 user interactions.

- **Stage 3. Consolidation and testing** (third year): consolidation of initiatives, communication of results and analysis of the communication impact.

[51] http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/2018/raee-2018-executivesummary-en.pdf

LITHUANIA

→ **Information & training measures**

Source:
The Residential Energy Efficiency Programme in Lithuania Case study[52], 2014, World Bank Group; 2016 report on the progress achieved towards national energy efficiency targets[53], 2018; Report for 2014 on progress achieved towards national energy efficiency targets, 2016

Measures: information and training measures linked to Programme "Renovation (modernisation) of multi-apartment blocks"

SHORT DESCRIPTION: The Lithuanian Housing Strategy adopted in 2004 specifically addressed the residential sector, and focused on increasing energy savings in the residential sector through retrofits of multi-flat buildings. A Multi-Apartment Buildings Renovation Programme was adopted that provided loans or subsidies for efficiency upgrades in dwellings. Although the Renovation Programme was quite successful among apartment owners, the state budget resources allocated to the programme were limited and, thus, could not be sustained. Therefore, implementation of the programme had to be suspended.

In 2009, Lithuania established a loan mechanism for residential energy efficiency, using funds from JESSICA, a financial instrument developed by the European Commission and the European Investment Bank (EIB) in collaboration with the Council of Europe Development Bank (CEB), and funded through the European Regional Development Fund (ERDF). This allowed Lithuania to provide low-interest loans without burdening the state budget (Source: The Residential Energy Efficiency Programme in Lithuania Case study, 2014, World Bank Group).

As a result of the implementation of the requirements of Article 7 of Directive 2012/27/EU, the apartment block renovation (modernisation) programme was further amended. The programme objectives for 2020 are (Source: 2016 report on the progress achieved towards national energy efficiency targets, 2018; report for 2014 on progress achieved towards national energy efficiency targets, 2016):

1. Securing the funding and implementation of projects for the renovation (modernisation) of apartment blocks meeting the programme requirements, granting preferential loans and other statutory State aid to owners of flats and other buildings, and encouraging owners of flats and other buildings to implement energy saving measures.
2. Ensuring that the public is better informed, better educated and more aware of issues related to building energy performance, renovation/modernisation and energy savings. To achieve objective 2 by the end of 2020, there has to be a 90% improvement of residents' awareness and a 60% increase in the number of people intending to get involved in the implementation of the Programme or intending to implement energy saving measures independently.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: According to the data provided by the Ministry of the Environment, 682 measures (seminars, training courses to upgrade qualifications for managers of public-use facilities, training courses to strengthen communication skills of representatives of the institutions implementing the Programme, publications in the national and regional press and in online media, leaflets, etc.) were implemented in 2016 under objective 2 of the programme – the amount of energy saved amounted 7.28 GWh. Based on the data provided, the amount of energy saved in 2015 was 6.45 GWh, compared with 41.12 GWh in 2014. The lifetime of the measure 'Ensuring that the public is better informed, better educated and more aware of issues related to

52 http://documents.worldbank.org/curated/en/219131468101065684/pdf/893220WP0P133200000201400601601 8-42.pdf

53 https://ec.europa.eu/energy/sites/ener/files/documents/lt_annual_report_2018_en.pdf

building energy performance, renovation/modernisation and energy savings' is one year. Therefore, the total amount of energy saved between 2014 and 2016 was 54.85 GWh.

In 2014, UAB Factus dominus carried out two quantitative opinion polls to determine the awareness of the residents of multi-apartment buildings on the Programme for the Renovation (Modernisation) of Multi-Apartment Buildings and other energy saving opportunities. The residents' trust is growing: over half of the respondents indicated that the renovation model is either attractive or very attractive. 71.1% had heard of the programme, mainly reached by television or national press; over 50% of them indicated that the information provided on the Programme for the Renovation (Modernisation) of Multi-Apartment Buildings is sufficient.

An assessment of the World Bank Group (2014) indicated that it is important to establish a strong, central competence centre to support homeowners and Housing Owners Associations, as the renovation process can be very complex, requiring various tools and management: "it is recommended to establish at the national level an institution to coordinate while developing tools and methodologies for choosing and implementing renovation projects. These tools might include templates for investment plans and energy audits, typical project designs, procurement solutions, standard procurement documents, decision-making templates for apartment owners, loan administration tools, monitoring of renovated buildings, publicity and visibility campaigns". In Lithuania, the Public Health Agency (BETA) was established in 2013. The Agency provides advice and assistance to homeowners on issues related to renewal (upgrading) of apartment buildings, evaluates and coordinates submitted investment plans and procurement documents, cooperates with municipal institutions, engineering consulting firms, educational institutions, NGOs, etc. The Agency also implements the programme for upgrading apartment buildings, activities related to the maintenance and quality of housing, the implementation of energy efficiency measures, and organises training and seminars. The main mission of the agency is to help all participants in the process of upgrading the apartment building: developing technical tools, providing methodical materials, and consulting the population (Source: http://atnaujinkbusta.lt/apie/#page-anchor-323).

Source: National Energy Efficiency Action Plan Lithuania 2014

Measure: "Only as much as needed" campaign to save energy

SHORT DESCRIPTION: The initiative "Only as much as needed" aims to encourage companies to consume less electricity by means of information provision and education and by involving communities and non-governmental organisations in the development and implementation of electricity-saving projects. Detailed information on the initiative "Only as much as needed" is published on the project's website www.tiekkiekreikia.lt. Enterprises are invited to join the "Green Protocol", initiated by AB Lesto. Signatories confirm that they are familiar with environmentally friendly ideas promoting rational electricity consumption, support these ideas and apply these ideas in practice.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: By the end of 2012, the Green Protocol was signed by 107 companies (in 2011 – 74 companies). The list of signatories is published on the project's website www.tiekkiekreikia.lt. In 2012, AB Lesto organised a conference "Energy efficiency solutions. A path towards business competitiveness". This conference was attended by more than 200 participants. After the conference the participants were asked to fill out a feedback questionnaire about the conference. 92% of the respondents stated that their expectations were met and 98% said that they would attend such an event again.

THE NETHERLANDS

The information and training measures in the NEEAP (2017), e.g. the Expertise Centre for Energy Saving, can be linked to the implementation of the Energy Agreement for Sustainable Growth. In 2013 this Agreement was concluded by the Dutch Government with more than 33 parties represented by the SER (Social and Economic Council of the Netherlands), among which industry, employers' associations, NGOs, trade unions, regional governments, housing associations, etc. In order to achieve significant energy savings in the built environment, the Agreement aims at stimulating cooperation between individuals and businesses through a combination of different types of measures, such as information provision, awareness raising, reducing the burden and funding support (Source: Phone interview MS, June 2018; European Parliament Research Service, 2016, Implementation of the energy efficiency directive (2012/27/EU): Energy efficiency obligation schemes).

The resources allocated to monitoring of training and information measures in general are relatively small, about 1 FTE per year. On the other hand, monitoring asks for the implementation of proper databases for which the costs are substantially higher. However, these costs are not only linked to monitoring, as these databases are also used for other purposes (Source: Written feedback on phone interview MS, RVO, June 2018).

→ **Information measures**

Source: Monitor Energie Besparing Gebouwde Omgeving 2016 (RVO, 2017)

Specific measure: "Guidance document and database with model performance contracts" (2013–2020) (publication on website)

SHORT DESCRIPTION: In the framework of the 'guarantEE' H2020 project, the Netherlands Enterprise Agency (RVO) published on a website model performance contracts to promote the market for energy services and facilitate small and medium-sized enterprises' access to this market.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: RVO indicates that it is difficult to monitor the impact of this measure as these contracts are not registered. In 2017 RVO, together with the Dutch ESCO network, collected data about the status of the energy performance contracts. These data show that the EPC market has been growing since 2010.

Source:
National Energy Efficiency Action Plan (2017);
Implementation of the EPBD in the Netherlands – status November 2015 (Hans van Eck, RVO, November 2015)

Specific measure: "Temporary energy label residential buildings" (2015) (distribution of provisional energy label)

SHORT DESCRIPTION: Between January and March 2015, 4.5 million residential building owners received by mail a temporary energy label (EPC), calculated on the basis of cadastral data (Hans van Eck, November 2015). This certificate gives information about the energy performance of the building. The campaign was intended to make building owners aware of the opportunities to improve the comfort and energy performance of their residence. In addition, the campaign aimed to inform the building owners about the obligation to have a definitive label in case of sale or rental. The obligation was also communicated through social media and other regional and national public channels. A call centre was set up (with 40 employees) and municipalities organised additional awareness campaigns and local information desks.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Public surveys show that the temporary energy label stimulated people (NEEAP, 2017). Of the 1,020 homeowners that were questioned, 46% said that, as

a result of the temporary energy label, they were planning to look up information on energy saving measures or had already looked it up. 32% of the respondents said they were also planning to implement energy saving measures.

Source:
National Energy Efficiency Action Plan (2017);
EEA database on climate change mitigation policies and measures in Europe (last update: 16/11/2017)

Specific measure: "The new driving programme" (1999 - …)

SHORT DESCRIPTION: The new driving programme is the Dutch Eco Driving programme, initiated by the National Authority in 1999. To achieve a transfer of the programme to the market, the implementation of the programme has been designated to the Institute for Sustainable Mobility (IVDM) from 2010 onwards. By giving information on a website and by organising awareness raising campaigns, IVDM aims to stimulate energy-efficient driving and purchasing behaviour (car technology, fuel, tires).

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Thanks to mass communication, the concept of "the new driving" became widely known in the Netherlands. Evidence from its practical application shows that the programme has saved at least 6% in fuel between 1999–2010. Over a period of four years (2010–2014), the measure led to a reduction of 1 million tons of CO_2.

Source: National Energy Efficiency Action Plan (2017)

Specific measure: "The best tyre" and "Declaration Use best tyres" (awareness raising campaign) (2015–2018)

SHORT DESCRIPTION: Information provision and awareness raising campaigns stimulate the purchase of high quality tyres and the regular inspection of tyres. Companies, governments and leasing companies are invited to sign the "Declaration Use Best Tyres". By signing, they agree to replace worn tyres in their own fleet with high quality tyres and to regularly check the pressure of the tyres.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The campaign was launched in April 2015 and awareness grew considerably over a short period (around 20%). Tyre sales have demonstrated a slight increase in the sale of better tyres.

Source:
Energie besparen doe je nu (R26) – Eindrapportage campagne-effectonderzoek (Martin Schalkwijk (2017);
Energie besparen doe je nu – flight 3 (R26) Eindrapportage campagne-effectonderzoek (Martin Schalkwijk) (2017)

Specific measure: Save energy now (awareness raising campaign) (2016–2019)

SHORT DESCRIPTION: "Save energy now" ("Energie besparen doe je nu") is a campaign that focuses on energy saving measures in homes with an energy label C or worse and construction year < 1991. The campaign targets owner-occupiers as well as owners-associations. The campaign aims at lowering implementation/investment barriers and increasing the sense of urgency. In addition, the campaign informs about the subsidy option and the website energiebesparendoejenu.nl.

It is a recurring campaign that runs during a short period of time but over several years.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: An impact assessment has been carried out for the campaign period 17 October–4 December 2016 and 20 February–9 March 2017.

The communication channels used are TV, radio, online display banners and Facebook. The total media budget for 2016 amounted to EUR 448,500 and for 2017 to EUR 197,200.

During the first period, the campaign reached 74% of the target group. During the second period, the campaign reached 79% of the target group. These results are mainly attributable to the use of

TV as a communication channel. The radio spots, banners and Facebook had a very limited reach (11%–36%).
The campaign succeeded well in conveying the message that energy saving measures can be taken. Other messages, such as the urgency, the existence of subsidies and the simplicity of taking such measures were less successful.
Knowledge about the website energiebesparendoejenu.nl increased and there were peaks observed in the website visits during the campaign period.
There were no significant changes in the long-term behaviour observed (based on the number of owners that took concrete steps to implement a measure, such as asking for an offer).

Source: Kaderprogramma Energiebesparend Wonen 2017 – Eindrapportage (H18-8846) (Milieu Centraal) (March 2018)

Specific measure: energiesubsidiewijzer.nl

SHORT DESCRIPTION: Energiesubsidiewijzer.nl is an online application, developed and hosted by Milieu Centraal on their website (milieucentraal.nl). This application provides information to homeowners on subsidies, loans and other schemes for energy efficiency.
LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In 2017 there were 381,556 visits or 31,800 visits (sessions) per month. This is an increase in the number of visits with 10% compared to 2016. The success of the website can be explained by the fact that a lot of organisations and companies refer to the Energiesubsidiewijzer. In 2017 a total budget of EUR 18,742 was spent for keeping the content of the website up-to-date and hosting the website.

Source: Kaderprogramma Energiebesparend Wonen 2017 – Eindrapportage (H18-8846) (Milieu Centraal) (March 2018)

Specific measure: bespaartest.nl

SHORT DESCRIPTION: Bespaartest.nl is one of the online applications that is developed and hosted by Milieu Centraal. The application Bespaartest.nl gives personalized advice on how households can lower their energy bill. The application can be consulted on the website Milieucentraal.nl.
LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In 2017 the application counted 20,125 visits. This is a slight decrease compared to 2016 with 27,139 visits.
On their website milieucentraal.nl, Milieu Centraal hosts several online applications. Energielabel.nl is the application with the most visits, namely 660,019 in 2017. In 2017 the website milieucentraal.nl counted almost 3 million pageviews on the topic of energy savings. In two years' time, the visits to the website are almost doubled. Topics related to energy count for 52% of the visits. The hosting of the website, content management of the website (e.g. text, infographics) and management of the applications represented a total cost of EUR 149,848 in 2017.

Source: Kaderprogramma Energiebesparend Wonen 2017 – Eindrapportage (H18-8846)

Specific measure: energieverbruiksmanagers.nl

SHORT DESCRIPTION: Energieverbruiksmanagers.nl, developed and hosted by Milieu Centraal, informs consumers about the existence of the energy managers and supports consumers in choosing an energy management system for their smart meters.
LESSONS LEARNED IN TERMS OF EFFECTIVENESS: In 2017 the website had 169,709 visits, a slight increase compared to 2016 with 156,836 visits.

Source: Implementation of the EPBD in the Netherlands – status November 2015 (Hans van Eck, RVO) (November 2015)

General: EPC web-based tool and accredited qualified experts

SHORT DESCRIPTION: This report gives an overview of the status of the implementation of the EPBD in the Netherlands in 2015. Several issues are addressed, such as certification, inspection and quality control systems, but also training of qualified experts and information campaigns.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The introduction of the EPC has empowered building owners to directly influence their energy consumption. The EPC is a marketing tool that motivates building owners to take energy saving measures. A good EPC is an indicator for good quality and an added value. This is also recognized by financial institutions and has influenced mortgaging. The EPC has supported builders and installers in their pursuit of energy efficiency as a new or renewed market by offering integral solutions to upgrade the EPC. The results of the simplified web-based approach in 2015:

- 4.5 million houses got a letter with information about the EPC (cf. temporary energy label) and a personal pre-setting in the EPC web-based tool;
- 2,150 trained qualified experts, of which 851 working with the web-based tool;
- costs kept low because of competition (average cost of EUR 25 per EPC);
- over 63,000 individual logins;
- over 510,000 registered EPCs.

Source:
Saving energy is not easy: An impact assessment of Dutch policy to reduce the energy requirements of buildings, Energy Policy, 93:23-32 (Vringer K., van Middelkoop M., Hoogervorst N., PBL) (2016)

Measures: energy efficiency policies in general

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Vringer et al. (2016) evaluates the energy efficiency policy in the Netherlands on effectiveness and efficiency. For new buildings, the combination of legal obligation and communication instruments is assessed to be very effective. However, the number of new buildings is small compared with the number of existing buildings and therefore the most energy must be saved in existing buildings. But the pace of energy saving in existing buildings is deemed slower than needed. The existing policy instruments do not sufficiently stimulate energy saving measures on a larger scale.

Source: Renovation strategies of selected EU countries – a status report on compliance with article 4 of the energy efficiency directive (BPIE, 2014)

Measures: energy efficiency policies in general

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: According to BPIE (2014), the Dutch strategy is based around three key principles: informing and raising awareness; facilitating; and financial incentives. The fact that a wider Energy Agreement for Sustainable Growth has been secured with a number of stakeholder bodies is therefore considered a strength.

Source: EPRS European Parliament Research Service; 2016, Implementation of the energy efficiency directive (2012/27/EU): Energy efficiency obligation schemes

Measures: energy efficiency policies in general

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The strengths of the Dutch approach are the robust transparency and accountability systems. Public communication campaigns about the available energy efficiency measures and their results are regularly undertaken. In addition, an annual progress report and a National Energy Report ensures that the outcomes of the measures are periodically assessed.

→ **Training measures**

Source: Implementation of the EPBD in the Netherlands – status November 2015 (Hans van Eck, RVO) (November 2015)
Written feedback on phone Interview MS, RVO, June 2018

General: EPC web-based tool and accredited qualified experts

LESSONS LEARNED IN TERMS OF EFFECTIVENESS:

This report gives an overview of the status of the implementation of the EPBD in the Netherlands in 2015. Several issues are addressed such as certification, inspection and quality control systems, but also training of qualified experts and information campaigns.

There are 200 certified companies in the Netherlands, with 844 accredited qualified experts for residential buildings and 150 for non-residential buildings. The exams for non-residential buildings are organised by CITO. The exams for residential buildings are organised by SVMNIVO. The experts can also follow a training course from RVO to learn to operate the EPC web tool. The number of accredited qualified experts will increase as 2,100 persons applied for accreditation.

The Dutch policy makers indicated during the phone interview that the following aspects are important while designing a training course:

- It must be clear at an early stage how long the recognition is granted and what must be done to extend the recognition;
- Physical presence can be replaced by a web-based training, to increase the attendance rate;
- The training course should take into account the background of the trainees.

SLOVAKIA

→ **Information measures**

Source: National Energy Efficiency Action Plan 2017, Ministry of Economy of the Slovak Republic, 2017
National Energy Efficiency Action Plan 2014, Ministry of Economy of the Slovak Republic, 2014

Measure: Living with Energy

Promoting awareness and consulting in energy efficiency and in the use of renewable energy sources, including public awareness

SHORT DESCRIPTION:

The Slovak Ministry of the Economy founded the Slovak Innovation and Energy Agency SIEA as an organisation partly financed by the Ministry that provides, in addition to other activities, consultancy on energy efficiency at its four branches (in Bratislava, Trenčín, Banská Bystrica and Košice) for all target groups, including the public sector, enterprise, households, and children and young people (http://www.siea.sk/povinne-informacie/c-174/zriadovacia-listina-siea/). The Agency works closely with the central state authorities, the Union of Towns and Cities of Slovakia and the Towns and Municipalities Association. It performs such activities by publishing free advice on its website (http://www.siea.sk/bezplatne-poradenstvo/), issuing publications, organising seminars and conferences, operating a free telephone helpline and providing consultancy directly in towns and municipalities.

The Slovak Innovation and Energy Agency started implementing the national project 'Promoting awareness and consulting in energy efficiency and in the use of renewable energy sources, including public awareness', shortly stated as 'Living with Energy' in 2009. It was implemented via the Operational Programme Competitiveness and Economic Growth and was successfully completed on 31 December 2015. The project aimed to increase the level and quality of public awareness on energy efficiency and the use of renewable energy sources. The project focused on the provision of professional energy consulting, especially for households, the public sector, enterprises and students. This project will continue for all energy-using target groups in the 2014–2020 programming period.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: Since May 2010, advice centres have been set up in Trenčín, Banská Bystrica and Košice to provide free advisory services to the general public and professionals by means of toll-free telephone lines (3,320 consultations), email correspondence (2,360 consultations) and personal consultations (1,650 at the centres and 2,400 at exhibitions and trade fairs). The Slovak Innovation and Energy Agency has published more than 40 types of documents on energy savings and the use of renewable energy sources with an overall print run of 2,780.350 copies, and has held more than 120 professional events for 5,650 participants. Consulting is also available via a website, which has attracted more than 2,200,000 hits.

The project also included the preparation and publication of printed materials on energy savings and use of renewable energy sources. Numerous brochures and leaflets were published for the different target groups. Primary schools were particularly interested in Auntie Eta's Advice Folders with Energy Experiments. Teachers and students were able to work with these materials directly in their lessons. The 'Auntie Eta's Advice' information materials were used in more than 50 primary schools. Slovak Innovation and Energy Agency experts have visited more than 30 schools where, as part of an expert programme, they explain energy savings to the children. In addition to the annual 'Energy Efficiency Marathon', aimed at highlighting the principles of energy efficiency in the production and distribution of energy, the SIEA also regularly organises lectures at the youth club, hosted by the Agency's offices in Banská Bystrica. It has cooperated with 140 elementary and nursery schools in the scope of the project and others have declared an interest.

SPAIN

→ **Information measures**

Source: Spain's National Energy Efficiency Action Plan NEEAP4, May 2017

General: multiple awareness raising campaigns & communication channels

LESSONS LEARNED IN TERMS OF EFFECTIVENESS:

The **IDAE advert** on energy efficiency and saving measures, targeted at the general public, achieved the category of "Spot de Oro" (Gold Spot, renowned advertising award), with a milestone reached on 29 July 2015 on the A3TV channel, registering 2,256,000 viewers.

The **"IDAE website"** registered 1,200,000 users between 2014 and 2015. During this period the number of visitors, site views and logged sessions remained stable.

The **"IDAE e- newsletter",** providing specialized information on IDAE activities regarding energy savings and renewable energies, registered 20,000 subscribers in 2017.

The **"IDAE – Proprietary audiovisual content"** includes a series of communication and awareness-raising activities, whose performance were assessed:

- The "Energía 3D" documentary, released in 2013 across 3D-equipped cinemas, reached 100,000 viewers in December 2015;
- Public audiovisual content composed of informative recordings about energy efficiency (such as videos on Eco-driving, street lighting, micro-cogeneration and household energy savings) were communicated via IDAE's YouTube channel, which recorded 112,270 views between 2014 and 2015 and 321,638 views in June 2018; IDAE's Vimeo channel recorded 4,182 views between 2014 and 2015;
- Broadcast of the series "Emprendedores Innovadores" (Innovative Entrepreneurs) on Spanish Radio Television (RTVE) – this is an informative programme that shows over 26 episodes how different innovative Spanish entrepreneurs started up technology-based companies in Spain and abroad in the field of energy efficiency and renewable energy.

The **"Public information services on energy efficiency and renewable energies"** aims to inform citizens about energy efficiency and renewable energy-related topics. In 2015, the Servicio de Información al Ciudadano en Eficiencia Energética y Energías Renovables (SICER) handled over 23,000 queries. The monthly average stood at 1,900 queries with a peak of 26,000 queries in July 2015, an interest triggered by the different energy efficiency programmes published that month. The table below gives an overview of the share that each of the queries represent:

Queries:	Distribution:
Miscellaneous queries (General info)	13.2%
Renewable energy	0.7%
Energy efficiency	20.5%
Queries about aids	65.6%
JESSICA-FIDAE	0.5%
MOVELE	1.1%
PAREER- CRECE	45.7%
PIVE plan	12.8%
Other	5.5%

Source:
Communication and institutional advertising campaign for national energy saving coverage and the new electric billing system[54], IDAE, 2014;
Spain's National Energy Efficiency Action Plan NEEAP4, May 2017;
2015 Annual report on progress achieved towards national energy efficiency targets for 2020 (2015)

Measure: 2014 Communication campaign (Controlas tu Energía)

SHORT DESCRIPTION: The 2014 communication campaign, publicly known as "Controlas tu energía" ("You control your energy"), was launched by the IDAE. Through institutional advertising, the national energy saving coverage and the new electric billing system was communicated to the general public. PUBLICIS COMUNICACIÓN ESPAÑA, S.L. was responsible for the communication and advertising of national coverage. The campaign was conducted between July and December 2014, using national media. This included conventional media (television, radio, press and billboards), films and internet communication axes (http://www.controlastuenergia.gob.es).

Special actions included:

- An agreement with Radio Televisión Española (RTVE) for the creation of two information items on the public service programme 'Para nosotros la 2' on RTVE channel "La 2".
- Distribution of 13.5 million public information leaflets, sent with the electricity bills via the Spanish Association of the Electrical Industry (UNESA) and participation of the main five electricity utility companies (Gas Natural Fenosa, Iberdrola, Endesa, Viesgo and EDP).
- TV Advertising in 'El Hormiguero' on Antena 3TV, television programme with an audience of 2.2 million viewers.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The impact of the campaign was measured in two surveys, conducted by the independent body GAI (Grupo Análisis e Investigación):

- The first survey measured the conventional impact of the campaign, which comprised 1,200 respondents, had a sampling error of +2.89% and a confidence level of 95.5%. It assessed, inter alia, spontaneous recall, prompted recall and campaign awareness and visibility, etc.
  The survey gathered that 5 out of 10 respondents recalled the campaign, with 67.7% spontaneously knowing about the change to the electricity billing system and the energy saving measures.
- The second survey measured the impact in terms of energy savings achieved through changes in consumer behaviour in response to advice, information campaigns, labelling, certification systems and smart metering.
- The most effective communication channel was television with 86.7% of the respondents remembering the advertising campaign, followed by radio and online press.

As a result of these surveys, a saving of 13 ktoe/year was attributed to the 2014 campaign.

Source:
Spain's National Energy Efficiency Action Plan NEEAP4, May 2017;
Press release IDEA, Nueva campaña del MINETUR para promover el ahorro de energía[55] (2015)

Measure: 2015 Communication campaign (Energy Saving and Efficiency 2015)

SHORT DESCRIPTION: On July 2015, the Ministry of Industry, Energy and Tourism through the IDAE, launched the 2015 communication campaign under the name "Energy Saving and Efficiency 2015". The measure was allocated a maximum budget of EUR 4 million (plus VAT), financed by the National Energy Efficiency Fund, and aimed to promote and encourage responsible energy consumption habits among the general public and other sectors with *messages* such as improving energy efficiency in buildings, energy labelling, eco-driving and exploiting the lines of aid available.

[54] http://www.idae.es/12697012014-campana-de-comunicacion-y-publicidad-institucional-de-cobertura-nacional-de-ahorro-de

[55] http://www.idae.es/noticias/nueva-campana-del-minetur-para-promover-el-ahorro-de-energia

The campaign, broadcast in July 2015, used national media. This included conventional media (television, radio, press and billboards), films and internet communication axes (http://www.controlastuenergia.gob.es).

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The impact of the campaign was measured by an independent body, GAI (Grupo Análisis e Investigación):

- **Eco-driving promotion measures:**
  - 44.4% of the population remembered the campaign (recall being greatest among frequent drivers).;
  - 60.5% of those who remembered the campaign recalled the advice given;
  - 26% of the drivers who remembered the campaign affirmed that they would put the advice into practice.
- **Building and energy efficiency** improvement measures:
  - 30% of the respondents remembered the campaign;
  - The level of persuasion achieved by the campaign was stated as satisfactory;
  - 37% of the homeowners who saw the campaign looked for further information;
  - 26.8% of those who remembered the campaign suggested their residents' associations to apply for the grants.
- **Energy labelling** measures:
  - 22.1% remembered the campaign;
  - The awareness on energy labelling was superior for those who saw the campaign, compared with those who did not.

These results can be credited to the way the messages were delivered (clear, simple and direct) and the popularity of the celebrity that endorsed the campaign — Antonio Resines. A notable milestone was reached on the 29 July 2015, when the IDAE advert was shown at 22:48:46 on TV. Channel A3TV received the 'Spot de Oro' for being the most watched commercial that day, attracting 2,256,000 viewers**.**

Savings resulting from the campaign: 19 ktoe/year of final energy in 2015.

Source:
Spain's National Energy Efficiency Action Plan NEEAP4, May 2017

IDAE 2017 Communication campaign (Pequeños Gestos)

SHORT DESCRIPTION: The 2017 Spanish communication campaign, publicly known as "Pequeños Gestos" ("Little gestures"), was a social awareness raising and information campaign, launched in 3 waves, by the Ministry of Energy, Tourism and Digital Agenda (MINETAD) and the IDAE. The communication channels used during the campaign included radio, TV, exterior advertisement, press and diverse online platforms (http://www.pequeñosgestos.es) and social media (IDAE Twitter, Facebook, Vimeo and YouTube). With a budget of EUR 6 million, the programme promotes the efficient use of air conditioning and heating, efficient driving or public transport, and provides tips and information to raise awareness of the general public.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: With the funding of the National Energy Efficiency Fund (FNEE), the MINETAD estimates that the campaign will save a minimum of 16 ktoe/year of final energy and 64ktoe by the year 2020. However, data about the actual savings realized are not available yet.

→ **Training measures**

Source:
Spain's National Energy Efficiency Action Plan NEEAP 4, May 2017

Measures: e-learning platforms for the general public and central government staff

SHORT DESCRIPTION: The **"Energy efficiency training for the general public"**, launched in November 2011, was carried forward due to the success of the AGE Formation e-learning Platform (see next measure) and has run over 18,560 courses. The platform is expected to be expanded and updated over the next few years. On the IDAE website (www.aprendecomoahorrarenergia.es) citizens can find information about energy efficiency and energy saving pathways, eco-driving recommendations and awareness raising information. The courses focus on how to save energy at home, at work and in transport and require between one and six hours' work, depending on the course.

These courses are free of charge and use a wide range of multimedia content to create an interactive format and facilitate learning. Each course also includes downloadable guides and additional documentation.

The **"Energy efficiency training for central government staff",** launched from April 2010 to December 2016, has run a total of 7,864 energy efficiency, renewable energy, environment and savings-related courses. Originally available on the AGE Formation e-learning platform (http://formacion.paee-age.es/), it includes the same information as the e-training meant for the general public with some extra features:

- Specialized formation on energy efficiency measures in buildings (to be restored and new). With detailed information about the ongoing Building Renovation Plan;
- Legislative issues;
- Government aids.

This training platform has two clear objectives:

- To train those responsible for energy in buildings and energy managers at ministries;
- To promote energy savings by providing information and raising awareness among government staff.

When completing some courses, learners can fill in a questionnaire to test what they have learned. Once they have passed a course, learners can download a course certificate.

Source:
EEA database on climate change mitigation policies and measures in Europe (last update: 16/11/2017)

Measures: training to improve efficient driving

SHORT DESCRIPTION: With the objective of improving driving behaviour, IDAE has developed **teaching courses on efficient driving targeted at drivers (professional drivers of industrial vehicles).** The programme targets the transport sector and runs from 2015 to 2020.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The Transport to Work and Fleet Management Plans are estimated to realize an improvement in efficiency of 5%. The efficient driving actions are estimated to realize an improvement in efficiency of 10%.

The impact of the training on greenhouse gas (GHG) emissions is estimated to be:

- GHG emissions reductions for year 2020 (kt CO_2-equivalents per year): 175;
- GHG emissions reductions for year 2025 (kt CO_2-equivalents per year): 175;
- GHG emissions reductions for year 2030 (kt CO_2-equivalents per year): 175;
- GHG emissions reductions for year 2035 (kt CO_2-equivalents per year): 175.

SHORT DESCRIPTION: Further actions targeted at the transport sector include the Order INT/2229/2013 that regulates the access to the permissions of circulation. This measure, initiated by the Ministry of Interior, aims to improve the behaviour of Spanish drivers **by forcing the implementation of efficient driving training & evaluation while obtaining the driver's license**.

LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The impact of this measure on greenhouse gas (GHG) emissions is estimated to be:

- GHG emissions reductions for year 2020 (kt CO_2-equivalents per year): 105.
- GHG emissions reductions for year 2025 (kt CO_2-equivalents per year): 180.
- GHG emissions reductions for year 2030 (kt CO_2-equivalents per year): 250.

SHORT DESCRIPTION: The Ministry of Agriculture and Fisheries, Food and Environment developed the **"Efficient driving of tractors"** initiative. This measure, targeting the transport sector, aims to improve the behaviour of drivers and supports professionals in managing and reducing their energy expenses.
LESSONS LEARNED IN TERMS OF EFFECTIVENESS: The measure runs from 2014 to 2020 and is expected to realize a reduction of GHG emissions of 0.45kt CO_2-equivalents per year by 2020.

ANNEX D – MEMBER STATES AND EU PRACTICES TOWARDS FINANCIAL INSTITUTIONS: ASSESSMENT OF EFFECTIVENESS IN THE TEN SELECTED CASES

Based on an in-depth literature review of the initiatives towards financial institutions put in place in the ten selected Member States and at EU level, a list of measures is collected, described and organised under four key drivers with the objective of identifying key lessons learned in terms of effectiveness and replicability potential. This Annex gives an overview of the evidence collected, except for Slovakia as no information nor training measures towards financial institutions can be identified in their NEEAP2014 and NEEAP2017.

EU LEVEL

→ DRIVER 1: Standardisation: development of easy-to-use standards for all steps in the energy efficiency investment process

Measure/Initiative: Energy Efficient Mortgages Initiative H2020

Sources: Roadmap for EE Mortgage Initiative[56], ECBC, 2016; Website EE Mortgages Initiative H2020[57]; Press release – EMF-ECBC welcomes European Commission's announcement that it will consider amending capital charges for Green Mortgages[58], 2017; Press release – Energy Efficient Mortgage Initiative Gains Strong National Support from Belgium[59], 2017.

Responsible organisations: The initiative is managed by the European Mortgage Federation – European Covered Bond Council (EMF-ECBC), which works together with a series of European partners.

Timeline: 2015–2019

Short description: The objective of the Energy Efficient Mortgages Initiative is to develop a **standardised, pan-European mortgage financing mechanism** incentivizing EU citizens to improve the energy efficiency of their buildings or acquire an already energy efficient property. This is achieved via preferential financial conditions linked to the mortgage. This mortgage financing mechanism is intended to be supported by an Energy Efficiency Data Portal and Protocol (EeDaPP) to collect and access large-scale empirical evidence related to energy efficient mortgage assets allowing a comprehensive analysis of de-risking energy efficient features (Source: https://hypo.org/ecbc/market-initiative/emf-ecbc-energy-mortgages-initiative/). The Energy Efficient Mortgages Initiative represents the first time a group of major banks and mortgage lenders, as well as businesses and organisations from the building and energy industries, has come together to address the concept of energy efficient mortgages.

Lessons learned in terms of effectiveness:

- The **initiative is market-led** and demonstrates the importance of having a strong buy-in of key market actors. It relies on cross-sectoral consultations with stakeholders to develop its data protocol and portal.
- The Energy Efficient Mortgages Initiative managed to **gain support from national governments** and published a series of "building assessment briefings" focusing on specific Member States. A

[56] https://hypo.org/app/uploads/sites/3/2017/01/ROADMAP-FOR-AN-EE-MORTGAGES-INITIATIVE.pdf

[57] http://eemap.energyefficientmortgages.eu

[58] https://hypo.org/app/uploads/sites/3/2017/12/FINAL-Press-Release-EC-to-consider-amending-capital-charges-for-Green-Mortgages-12.12.17.pdf

[59] https://hypo.org/app/uploads/sites/3/2017/05/Press-Release-EeMAP-Belgium-Roundtable-15.11.17.pdf

series of national roundtable events were also organised, notably in Italy and Belgium. The Belgian event, organised in cooperation with the Flemish Construction Confederation (VCB), brought together experts from the Belgian and European banking, construction, valuation and engineering sectors with a strong interest in the energy efficiency of buildings and its financing. It was also attended by representatives of the Cabinets of the Belgian Regional Energy Ministers, illustrating the political support for the initiative. The event's aim was to discuss how energy measurement calculations and asset performance documentation developed and deployed in Belgium can be scaled up to Europe (Source: Energy Efficient Mortgage Initiative Gains Strong National Support from Belgium, 2017). In this context, the Flemish Construction Federation has developed the ReCalculator tool to provide an accurate estimation of the real energy savings after renovation.

- The European Commission recognised the value of the Energy Efficiency Data Portal & Protocol (EeDaPP, http://eedapp.energyefficientmortgages.eu/) being developed as part of this initiative, stressing that it has "*the potential to lead the way in providing evidence demonstrating the existence of a de-risking set of data, which would justify the amending of capital charges for green mortgages and green covered bonds*" (Source: Press release - EMF-ECBC welcomes European Commission's announcement that it will consider amending capital charges for Green Mortgages, 2017).

Measure/Initiative: EEFIG Underwriting Toolkit

Sources: Interview with Steven Fawkes, Member EEFIG project team (EnergyPro Ltd), June 2018; Website EEFIG Underwriting Toolkit[60]; EEFIG Underwriting Toolkit, BPIE presented during SEIF Milan November 2017[61].

Responsible organisations: Energy Efficiency Financial Institutions Group (EEFIG)

Timeline: 2016–ongoing

Short description: The Underwriting Toolkit was designed to assist financial institutions to scale up their deployment of capital into energy efficiency. By favouring a common framework between developers, project owners and financial institutions, it provides a mutual approach on understanding and assessing the risks and value of energy efficiency projects and investments. It was compiled with several objectives in mind, i.e.:

- to help originators, analysts and risk departments within financial institutions better understand the nature of energy efficiency investments and therefore better evaluate both their value and their risks;
- to provide a **common framework for evaluating energy efficiency investments and analysing the risks** that will allow training and capacity building around standardised processes and understanding;
- to help developers and owners seeking to attract external capital to energy efficiency projects in a way that better addresses the needs of financial institutions; and
- to foster a common language between project developers, project owners and financial institutions.

The Toolkit also sets out the **multiple benefits** (additional value beyond the pure energy saving) created by energy efficiency projects.

Lessons learned in terms of effectiveness:

- Although the focus of the Toolkit is on value and risk appraisal, additional material on the size of the potential market, methods of financing and the project life cycle have been included to give a fuller picture and to build capacity within financial institutions.

[60] http://valueandrisk.eefig.eu/

[61] https://ec.europa.eu/energy/sites/ener/files/documents/011_1a_mariangiola_fabbri_seif_milan_16-11-17.pdf

- The Toolkit displays several market instruments inside the financing of energy efficiency projects. This overview allows a wider range of financial strategies to be developed depending on the objective of each programme (such as commercial/consumer loans, leases, green mortgages, energy efficiency funds, specialized energy services contracts (e.g. EPCs and others), green bonds).
- The initiative places special emphasis on the need to improve communication between project developers and financial institutions through a common process and language.
- By setting out the multiple benefits created by energy efficiency projects, the Toolkit provides investors with strategic data, going further than merely the benefits offered by energy savings only.
- Risks, on the other hand, underline the need for financial institutions to tag EE loans to enable risk analysis in the future; to overcome the shortage of data linking energy performance to financial performance; and to consider performance risk, which has tended to be neglected to date.
- The next step for EEFIG is now to disseminate the Toolkit across financial institutions. This is a challenging task since it requires **engaging with them at the right point in time, i.e. when they design their investment programme** and can more easily integrate relevant features from the Toolkit.

Measure/Initiative: Investor Confidence Project (ICP) Europe

Sources: Interview with Steven Fawkes, ICP Europe Senior Advisor, June 2018; Website Investor Confidence Project[62]; Investor Confidence Project Europe[63], Denkstatt presented during SEIF Prague April 2017.

Responsible organisations: ICP Team, European Commission's Horizon 2020 Research Team, Green Business Certification Inc. team.

Timeline: 2015–ongoing (2011–ongoing in the USA)

Short description: The ICP is an international framework providing **a standardised way to assess the development, documentation and measuring of energy efficiency projects, as well as their risks and benefits**. It aims to unlock access to financing for the building, industry, district energy and street lighting markets. The European ICP model, based on the successful model of ICP USA, aims to reduce owner and investor risks, lower due diligence costs, increase certainty of savings achievement and enable aggregation. The ICP developed the **Investor Ready Energy Efficiency™ Certification** (IREE™), a certification that assembles best practices and existing technical standards into a set of Protocols that define a clear roadmap for developing projects, determining savings estimates, and documenting and verifying results. The standardisation methodology developed by the ICP focuses on transparency and consistency of energy efficiency projects, providing investors with the trust to settle their confidence in the market.

Lessons learned in terms of effectiveness:

- The IREE™, developed by ICP, has allowed energy efficiency projects to access **a compliance warranty** that fulfils the trust standards demanded by the European investment market. The certificate is independently verified under project protocols by an ICP Quality Assurance professional.
- ICP engages with European investors through its **Investor Network**, a web of European partners committed to energy efficiency with EUR 1.5 billion in capital available to deploy, some of them offering incentives to IREE™ projects. See the list of members, available here: http://europe.eeperformance.org/investors.html#!directory

[62] http://europe.eeperformance.org/

[63] https://ec.europa.eu/energy/sites/ener/files/documents/019_2.1_andreas_lindinger_seif_prague_27-04-17_1.pdf

- ICP Europe was piloted with more than 30 projects and programmes in the UK, Ireland, Germany, Austria, Bulgaria, Latvia, Italy, Spain and Portugal and 18 financial institutions and delivered some key successes, such as the use of the ICP framework by the London Energy Efficiency Fund (LEEF) and leading insurance companies such as HSB and part of Munich Re. HSB stated publicly that any project that is developed via ICP automatically qualifies for its insurance, which translates to a lower premium.
- Now that ICP Europe exists and is available to all, it **needs to be picked up by financial institutions in the Member States**. Efforts are currently being put in place to disseminate the ICP framework by franchising it across MS (e.g. Austria, Bulgaria, Germany, Portugal, United Kingdom).
- Obstacles for further dissemination include the fact that as long as it is not a recognised standard, it is just one additional certificate alongside many others. It was also stressed that ICP requires **an advanced level of knowledge from financial institutions**, which is currently still lacking in many MS.

→ **DRIVER 2: Benchmarking to increase investor confidence and changes in the risk perception of energy efficiency investments**

Measure/Initiative: De-risking Energy Efficiency Platform (DEEP) database

Sources: Interview with Steven Fawkes, Member EEFIG project team (EnergyPro Ltd), June 2018; Deep Brochure[64]; EEFIG DEEP website and information [65] [66] [67].

Responsible organisations: European Commission Directorate-General for Energy (DG Energy), United Nations Environment Programme Finance Initiative (UNEP FI) Team, Energy Efficiency Financial Institutions Group (EEFIG) and the De-risking Energy Efficiency Platform (DEEP) Team.

Timeline: 2013–ongoing

Short description: The DEEP database is an **open source database focused on energy efficiency investments, performance monitoring and benchmarking**. The measure supports the assessment of benefits and financial risks and allows highly customisable comparison of implemented energy efficiency investments per country, per measure type, building type and verification method, among others. It aims to helps project developers, financiers and investors to better assess the risks and benefits of energy efficiency investments within European and global market evidence.

Lessons learned in terms of effectiveness:

- The DEEP database represents a good start and a **considerable achievement in terms of collection of energy efficiency projects in buildings and industry**, aiming to collect 200+ data points for each energy efficiency investment. It contains more than 10,000 projects, contributed by more than 25 data providers. The database is used by nearly 6,500 users from academia/research, civil society/NGOs, finance, industry/SMEs, professionals/consultants, public/governmental and other sectors. The database allows a visual display of information about the number of projects, median payback and median avoidance cost in the infrastructure and industrial sector per country. This allows a competitive approach that can help financial institutions **reduce risks from their investments**.
- The initiative allows actions to be built to help the further deployment of financial instruments (e.g. FI Compass – a website and advisory service to help projects identify suitable financial institutions) and the reinforcement of EU Project Development Assistance (PDA) to help project

[64] http://www.eefig.com/images/DEEP/DEEP_Brochure.pdf

[65] https://deep.eefig.eu/

[66] https://www.interregeurope.eu/policylearning/news/1152/the-de-risking-energy-efficiency-platform-deep/

[67] http://www.buildup.eu/en/explore/links/de-risking-energy-efficiency-platform-deep-0

aggregation and de-risking activity to support investors and promoters assess energy efficiency investments.

- Despite these achievements, the DEEP database contains limited real performance data as most of the **collected data are initial energy efficiency estimates**. From a financial institution perspective it **does not provide sufficient details** on the level of risks and return on investment.
- The US undertook the same approach to DEEP, but the initiative failed as the database proved very difficult to maintain. Consequently, they switched their approach from a database to the **development of a data exchange platform**, i.e. the Building Energy Data Exchange Specification (BEDES; https://bedes.lbl.gov/) project. BEDES is: "*a dictionary of terms, definitions, and field formats which was created to help facilitate the exchange of information on building characteristics and energy use. It is intended to be used in tools and activities that help stakeholders make energy investment decisions, track building performance, and implement energy efficient policies and programmes*". It allows the frictionless exchange of data and proved to be a successful model (Source: https://www.energy.gov/eere/buildings/building-energy-data-exchange-specification-bedes).

Measure/Initiative: European Energy Efficient building district Database (Exceed)

Sources: Exceed Project Website[68]; Exceed one-pager[69], 2016.
Responsible organisations: The European Academy of Bolzano (EURAC) Research Team, the Research at the Building Performance Institute Europe (BPIE), Hoval, 3E and Wattics.
Timeline: 2016–ongoing
Short description: The ExcEED project aims to answer the need for transparency and comparability of energy performance calculations. The database holds key performance indicators (KPIs) to quantify and benchmark the energy efficiency and the environmental quality of last generation buildings and districts. The measure analyses real energy performance and environmental quality at the level of single buildings and districts, geo-clusters of buildings and the new or renovated European building stock, with the objective of delivering transparent and comparable information on energy performance calculations that provide immediate value to the user.
Lessons learned in terms of effectiveness:

- The database and associated analyses are guaranteed beyond the project thanks to a model of financial self-support. This approach avoids loss of information and ensures its possible use as a model or reference for future projects.
- The ability to **continuously gather new data through surveys and other specific features** increases project visibility among designers with interest in the major rating schemes, enhances the project's range and widens the platform's use for future energy efficiency projects.
- ExcEED is **connected to the major EU-financed databases** related to buildings and energy efficiency (i.e. EU Building Stock Observatory[70]). This approach allows results and analyses to be compared, ensuring that the tool's outcomes are reliable.

[68] http://www.exceedproject.eu/;
[69] http://www.exceedproject.eu/wp-content/uploads/2016/12/ExcEED-1-pager_Final.pdf
[70] https://ec.europa.eu/energy/en/eubuildings

→ DRIVER 3: Monitoring, Reporting and Verification: availability of performance data and clear/transparent monitoring and measurement of savings vs baseline

Measure/Initiative: Practical guidance for designing, implementing, financing and assessing investments in the area of sustainable energy in buildings, including MRV (2014)

Sources: Technical Guidance, Financing energy renovation of buildings with Cohesion Policy Funding[71], DG ENER, 2014.
Responsible organisations: European Commission DG ENER
Timeline: 2014
Short description: The document aims to provide Managing Authorities (MAs) with a comprehensive list of good practice approaches and case studies that will help the decision making, planning and deployment, as well as monitoring and evaluation of sustainable energy investments in buildings within Operational Programmes (OPs). The guidance, in the form of a practical 'roadmap', provides information on the current requirements of European building and energy efficiency regulations, seeking to detail the financing mechanisms that MAs can use to engage in innovative and ambitious sustainable energy projects within an OP, with the ultimate objective of providing energy and carbon savings in buildings and attracting greater levels of private-sector investment.
Lessons learned in terms of effectiveness:

- Practical steps set out in the guidance, as part of an overall roadmap of action, offer a clear way to understand the different aspects of sustainable energy investments and illustrate different channels that MAs can adopt, including using financial institutions. The model could be used as a reference to enable easier development of sustainable investment projects.
- A framework to assess the economic, social, energy-related and environmental impacts of sustainable energy projects in buildings is set out, as well as insights on the design and implementation of sustainable energy programmes and projects.
- The measure offers **customised support in designing an effective monitoring and evaluation** framework for sustainable energy projects and programmes.

→ DRIVER 4: Technical assistance & Capacity building: knowledge of energy efficiency technologies and necessary skills to assess energy efficiency investments

Measure/Initiative: Private finance for Energy Efficiency (PF4EE) Expert Support Facility

Sources: Website EU building Stock Observatory[72], DG ENER; Training session 2015 for LIFE national contact points[73], 2015.
Responsible organisations: European Commission and European Investment Bank EIB
Timeline: 2013–ongoing
Short description:
The PF4EE instrument was set up as a joint agreement between the EIB and the European Commission, using funding from the LIFE Climate Action sub-programme, with the aim of addressing the limited access to adequate and affordable commercial financing for energy efficiency investments. The instrument works with financial intermediaries within the EU MS and has an important component of training and capacity building. A small share of this training is directed towards LIFE Programme National Contact Points in the MS with the aim of training them with regard to the instrument and raising awareness about it in the Member States.

[71] https://ec.europa.eu/energy/sites/ener/files/documents/2014_guidance_energy_renovation_buildings.pdf
[72] https://ec.europa.eu/energy/en/eubuildings
[73] http://lifepalyazatok.eu/admin/data/file/20170131/pf4ee-for-ncp-training-june-2015.pdf

The largest share of the capacity building is organised under the PF4EE Expert Support Facility with the objective of having a common approach across all MS involved in the PF4EE instrument and **building the capacities of the financial institutions**. This facility is managed by Adelphi, MACS Management & Consulting and a network of consultants located in the MS involved in the PF4EE instrument. It has to date provided support to nine financial institutions across nine Member States[74].

Each round of capacity building starts with a three-day "Start-up training session" addressing the core group of individuals involved with PF4EE in the financial institutions and members of their risk departments. The training aims to provide them with detailed information about the PF4EE instrument and the EU regulatory framework for energy efficiency. It also allows a joint analysis to be performed of the capacity needs of the financial institutions in the field of energy efficiency and the key gaps to be addressed by the Expert Support Facility. The following needs typically have to be tackled:

- **Standardised training on energy efficiency financing** and the use of energy audits or energy performance certificates;
- **Understanding of the national EE markets** in terms of key actors involved and landscape of suppliers.
- **Practical sessions** on the specialties of financing energy efficiency projects and their technical appraisal;
- **Marketing energy efficiency projects**, where participants learned about examples of other banks and set up their own marketing campaign.

The Expert Support Facility also provides ad-hoc support as required by the financial institution and has developed a web tool to help financial institutions perform more rapid assessments of EE projects.

Lessons to be learned related to effectiveness:

The Expert Support Facility resulted in a better understanding of EE financing in the targeted financial institutions. It also helped them process their **first real-life EE financing projects**, which proved to be the **most effective way to learn** about the topic.

Measure/Initiative: Energy Efficiency Financial Institutions Group (EEFIG) National

Sources: EEFIG National Process[75]; Website EEFIG National[76]; EEFIG National Toolkit[77].

Responsible organisations: European Commission and United Nations Environment Programme – Finance Initiative (UNEP FI)

Timeline: Established in 2013

Short description:

Following the success of EEFIG at EU level, initiatives were launched in five MS to run national engagement processes with finance experts. As stated on the EEFIG website: "*EEFIG National provides a platform to gather, interpret, present, analyse and exchange key data that can engage key national stakeholders through a structured process to align and focus their efforts to increase EE investments*."

Hereto, **EEFIG National used a standardised method and process to engage with key expert stakeholders** in Spain, France, Germany, Poland and Bulgaria over 12 months from July 2015 to June 2016. The EEFIG National Toolkit[78] was then developed to provide other MS with the necessary

[74] EIB has already signed an operation in the following Member States: BE, CZ, CY, ES, EL, FR, HR, IT, PT

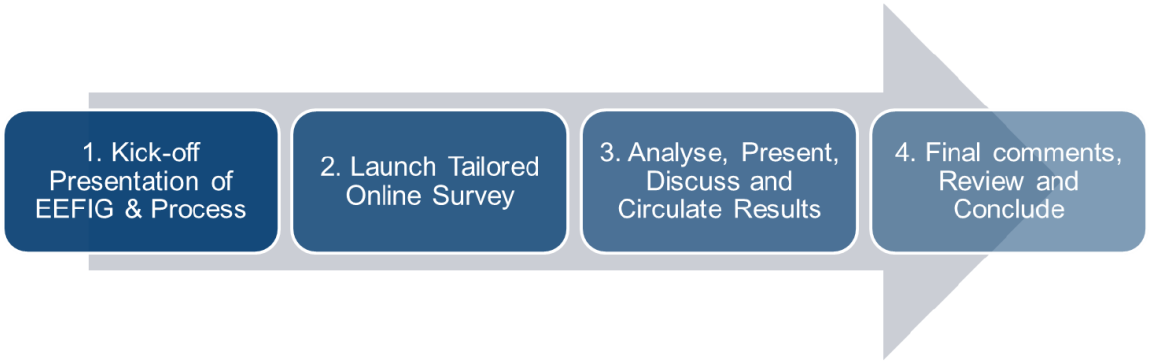
[75] http://www.eefig.com/images/eefig_local/4.-EEFIG-National-Process.pdf

[76] http://www.eefig.com/index.php/eefig-local

[77] http://www.eefig.com/images/eefig_local/3.-EEFIG-National-Toolkit.pdf

[78] http://www.eefig.com/images/eefig_local/3.-EEFIG-National-Toolkit.pdf

components to conduct and replicate the EEFIG National engagement process in different countries. The process steps suggested by the Toolkit are presented in the next graph.



EEFIG National Toolkit, Source: EEFIG, http://www.eefig.com/images/eefig_local/3.-EEFIG-National-Toolkit.pdf

Lessons to be learned related to effectiveness:
It is unclear what EEFIG National actually managed to deliver to date, but it is the right way to go according to different stakeholders who agreed on the fact that financial institutions in the MS require very tailored input to be able to progress in the field of EE financing.

Measure/Initiative: Sustainable Energy Investment Forums (SEIF), building on the EEFIG work

Sources: Sustainable Energy Investment (SEI) Forums, Energy Efficiency Finance Market Place[79], January 2017; Website SEIFs[80], DG ENER.
Responsible organisations: European Commission, Climate Alliance and the European Energy Efficiency Financial Institutions Group (EEFIG).
Timeline: 2016–ongoing
Short description: The aim of Sustainable Energy Investment Forums (SEI Forums) is to work with national stakeholders in order to boost large-scale investment and financing for sustainable energy. SEI Forums builds on the works of EEFIG. Related to the engagement process with financial institutions, the following actions were put in place: the use of private finance to invest in energy efficiency and small-scale renewables is being boosted by using **national roundtables of public and private experts** with influence over sustainable energy finance (cities, regions, industry and the financial sector). These measures are meant to establish the basis for long-term cooperation and provide roadmaps to improve access to sustainable energy finance. These forums also aim at agreeing adjustment on policy and regulatory frameworks in order to meet the EU's climate and energy goals.
Lessons to be learned related to effectiveness:

- The SEIF model has proven successful in engaging with market actors in the MS and **sharing the initiatives put in place by the EU towards the MS**. The SEIF has supported over 120 projects expected to trigger around EUR 6 billion of investments in energy efficiency and renewable energy on existing public and private buildings, street lighting, district heating and clean urban transport.
- SEIFs also enabled **shared good practices to be put in place at the MS level**, which might be a missing element in the current knowledge landscape.

[79] https://ec.europa.eu/easme/en/energy-efficiency-finance-market-place-jan-2017
[80] https://ec.europa.eu/energy/en/financing-energy-efficiency/sustainable-energy-investment-forums

Measure/Initiative: EIAH – European Investment Advisory Hub EIAH

Sources: Website EIAH[81], EIB; How to use ELENA and EFSI for EE investments, EIB presented during SEIF Energy Efficiency Market Place Brussels[82], January 2017.
Responsible organisations: The European Commission, the EIB Group, National Promotional Banks and Institutions and EU Member States' managing authorities.
Timeline: 2015–ongoing
Short description: The European Investment Advisory Hub (EIAH), being part of the European Fund for Strategic Investment (EFSI), is a European advisory platform meant to provide tailor-made investment advice and technical assistance services. It supports the identification, preparation and development of investment projects across the EU, providing tailor-made support for investors, project promoters and public managing authorities. The measure aims to give greater visibility to investment projects across the EU with special focus on those related to energy efficiency, transport, sustainability and renewable energies.
Lessons to be learned related to effectiveness:
The hub's tailor-made support provides detailed and personalized tailor-made data for each investment project. The technical assistance given to authorities and project promoters helps fulfil the eligibility criteria faster, while considering the situation in Member States with less advanced financial markets.

Measure/Initiative: European Local ENergy Assistance (ELENA) facility

Sources: How to use ELENA and EFSI for EE investments, EIB presented during SEIF Energy Efficiency Market Place Brussels[83], January 2017; European Investment Bank ELENA – European Local ENergy Assistance[84] [85].
Responsible organisations: European Investment Bank (EIB) and European Commission.
Timeline: 2009–ongoing
Short description: ELENA is a joint initiative by the EIB and the European Commission under the Horizon 2020 programme, meant to support the EU's climate and energy policy objectives and help local and regional authorities prepare energy efficiency, renewable energy and sustainable transport projects. The measure provides grants for technical assistance with the implementation of projects and programmes, financing costs on feasibility and market studies, programme structuring, business plans, energy audits, financial structuring or the preparation of tendering procedures, in order to face the contractual arrangements and project implementations.
Lessons to be learned related to effectiveness:

- It is on track to mobilise more than EUR 1.6 billion in investments over the next few years. It has awarded around EUR 100 million in EU support, an estimated investment of around EUR 4 billion on the ground.
- The ELENA team is composed of both experienced engineers and economists in the transport and energy sectors; the measure focuses on supporting those programmes above EUR 30 million with a 3 to 4-year implementation period on energy efficiency and urban transport, covering up to up to 90% of the technical assistance and project development costs.

[81] http://eiah.eib.org/
[82] https://ec.europa.eu/energy/sites/ener/files/documents/002_reinhard_six_seif_brussels_18-01-17.pdf
[83] https://ec.europa.eu/energy/sites/ener/files/documents/002_reinhard_six_seif_brussels_18-01-17.pdf
[84] http://www.eib.org/products/advising/elena/index.htm
[85] http://www.eib.org/attachments/thematic/elena_en.pdf

Measure/Initiative: ManagEnergy

Sources: ManagEnergy Website[86]; Welcome Europe Website[87]; ManagEnergy – Leaders in energy transition, EASME Executive Agency for SMEs [88].

Responsible organisations: European Commission together with the Limerick Institute of Technology (LIT), OÖ Energiesparverband (ESV), the North-West Croatia Regional Energy Agency (REGEA), FEDARENE, COGNITA, B&SU mbH, Millenium Promotion (MPR), the Tipperary Energy Agency (TEA) and the Berlin Energy Agency (BEA)

Timeline: 2014–ongoing

Short description: ManagEnergy is a technical support initiative of the Intelligent Energy for Europe (IEE) programme to promote and exchange best practices in the field of energy management. It aims to provide European support for local and regional energy and transport activities, to facilitate a global thought on strategic issues and the better use of the available sustainable energy solutions. The main tools used by the measure are workshops and online events, with additional information on case studies, good practices, European legislation and energy and transport programmes.

Lessons to be learned related to effectiveness:

- The website includes a partner search system with 4,000 organisations, including more than 400 energy agencies who provide valuable expertise and partnerships on energy activities at local and regional levels.
- The measure provides information, visibility, networking opportunities and support for local and regional energy agencies to deliver new services and boost existing ones. Master classes, expert missions and events in Brussels are used with the purpose of raising the skills of local and regional energy agencies in energy efficiency, financing and project development with a strong focus on sustainable energy investment initiatives.
- ManagEnergy uses online platforms, social media and communication tools to inform sustainable energy actors on the most recent developments in energy efficiency policies and financing opportunities, additionally organising 45 capacity building workshops in different Member States and 33 networking events.

[86] https://www.managenergy.net/ManagEnergyProject

[87] https://www.welcomeurope.com/european-funds/managenergy-474+374.html#tab=onglet_details

[88] https://ec.europa.eu/easme/en/managenergy-leaders-energy-transition

BELGIUM

Measure/Initiative: Energy Policy Agreements with several banks in Belgium

Source: National Energy Efficiency Action Plan 2017
Responsible organisations: Flemish government, several national banks
Timeline: Since 2012
Short description: At the end of 2012, the Flemish Government approved the proposal to conclude a **voluntary energy policy agreement with banks**. Financial institutions that enter into an energy policy agreement with the Flemish government undertake to offer beneficial loan terms to builders of energy efficient homes. In return, banks are assigned a label and are listed in the government communication on energy efficient construction and renovation.
Lessons to be learned related to effectiveness: In 2013, Belfius and Triodos Bank signed this energy policy agreement with the Flemish government to make energy efficiency a priority. They have since offered an advantageous Nearly Zero Energy credit for nearly zero-energy newly constructed residences. In 2016, ING, BNP Paribas Fortis and BPost Bank committed to offering cheap energy renovation loans of under 2 per cent interest in 2017.

Measure/Initiative: PF4EE to foster energy efficiency investments in Belgium – Belfius

Source: Press release – Belfius and EIB sign two new agreements[89], 2016.
Responsible organisations: Belfius Bank, European Investment Bank EIB in frame of PF4EE
Timeline: Launched in 2016
Short description: In frame of PF4EE, the European Investment Bank (EIB) and the bank Belfius have signed an agreement to encourage corporate investment aiming to improve energy efficiency in Belgium. This agreement enables Belfius to provide businesses with EUR 75 million in loans on favourable terms for investments aimed at improving energy efficiency in Belgium, thereby addressing key climate change issues. These loans are available to both businesses and Energy Service Companies (ESCOs). Belfius has access to the technical and financial expertise of specialized consultants and will benefit from a transfer of experience as part of PF4EE. These loans are also secured by the PF4EE guarantee up to 80% of their value.

[89] https://www.belfius.com/EN/Media/PRBelfiusEIBPF4EE20161208-en_tcm_77-129428.pdf

CYPRUS

Measure/Initiative: Cyprus' actions towards Financial institutions: workshops, roundtables and promoting low interest loans

Source: NEEAP2017, Phone interview Member States' representatives, Ministry of Energy, Commerce, Industry and Tourism of Cyprus, May 2018.

Short description: In general, there has been a great attempt to motivate financial institutions to participate in energy efficiency programmes during recent years. The **Ministry of Energy, Commerce, Industry and Tourism** has organised individual meetings with financial institutions' associates as well as workshops and roundtable discussions. They also cooperated with financial institutions on **creating more strategic plans on low interest loans**, as well as to promote the concept of ESCO & financing solutions.

The Directorate General for European Programmes, Coordination and Development (DGEPCD) **disseminates information to financial institutions regarding improving ways to issue low interest loans** for energy efficiency plans. Specifically, the DGEPCD, has conducted a study on assessing potential ways of the use of financial instruments in Cyprus (EIB, 2017) and put it at the financial institutions' disposal with the ulterior motive of enforcing low interest loans and attracting the general public to low interest loans. The link for the study is:
http://www.structuralfunds.org.cy/uploadfiles/20170728%20CY%20Final%20Report.pdf

Despite the fact that the Grant Scheme "Save & Upgrade" programme has been put into effect, it refers only to private users. The DGEPCD is currently trying to set into motion the same measure for small and medium companies (SMEs). But it is still in planning and has not been published yet.

DENMARK

Measure/Initiative: Bedre Bolig scheme (Better Home)

Sources: National Energy Efficiency Action Plan (2017); Evaluering af Bedre Bolig - Indikatorer på effekt, virkning og spredningeasure, NIRAS, December 2016; BUILDUP webinar, 2017, BPIE – "A look behind the Better Home Initiative"; New Danish Strategy for Energy Renovation of Buildings[90] , State of Green, 2014.
Responsible organisations: Danish Energy Agency (Energistyrelsen)
Timeline: 2014–ongoing
Short description: Bedre Bolig (Better Home) was launched in autumn 2014 by the Danish Energy Agency as part of the Danish Government's growth plan. The aim of the scheme is to give expert advice throughout the energy renovation process and make it easier and clearer for homeowners to renovate their homes (one-stop shop). Better Homes advisors were trained to develop legally required competencies and expertise in energy innovations (construction and renovation). The Better Home initiative is one of the 21 initiatives in the Danish Strategy for Energy Renovation of Buildings. The Energy Renovation Strategy resulted from the Danish Energy Agreement of 2012 and **engages more than 40 organisations** within the fields of building, energy and financing as well as knowledge institutions (Source: State of Green, 2014). In connection with the launch of Bedre Bolig, DKK 15 million has been allocated to the launch of a special information campaign (NEEAP, 2017).
Among other things, Bedre Bolig **focuses on developing cooperation between homeowners and financial institutions, enabling financial advisers to better advise their customers on the financing of energy improvement projects**. This means that, in connection with the establishment of the scheme, **a calculation programme and a report format** have been developed, which give the financial institutions a solid basis on which to assess the potential savings that could be made in a building and to facilitate the dialogue between homeowner and bank. The scheme has been targeted at homeowners until the year-end 2017. As of 1 January 2017, the scheme was expanded to also cover large buildings and apartment blocks (NEEAP, 2017).
The Better Home initiative is a homeowner-driven renovation model (BUILDUP webinar, 6/11/2017). The model aims at making the supply side more service oriented and increasing awareness at the demand side. What makes it interesting and unique is that, unlike the government-driven one-stop shops that are popping up all over Europe, **Better Home is industry driven**.
Lessons to be learned related to effectiveness: In the evaluation of the Bedre Bolig programme in 2015 and in 2016, overall satisfaction was expressed related to the training offered in the framework of the Bedre Bolig scheme. The companies confirmed that they were able to provide better advice after having followed the training. The market for Bedre Bolig consulting is relatively concentrated on few companies – the three to four largest companies apparently perform the vast majority of advisory tasks. It is difficult to provide a clear indication of whether the Bedre Bolig scheme promotes energy innovations among Danish homeowners (Niras, December 2016). In the three years that the Bedre Bolig scheme has existed, there has not been a general positive development in the proportion of Danish homeowners who are energy-innovating. There is no evidence that Bedre Bolig has led to a significant increase in energy innovation of Danish households as a whole at present. Still, according to the report, many homeowners state that the ability to receive a grant from their municipality, typically to cover 50% of the cost, was sufficient to incentivise them to request Better Homes advice (66%). The report also points out that the dialogue with the advisor has had an impact on the homeowner's decision around renovation. More than other homeowners, Better Homes participants have insulated pipes, basements, floors and hollow walls, and they have more installed heat pumps and solar collector/solar systems.

[90] https://stateofgreen.com/en/news/new-danish-strategy-for-energy-renovation-of-buildings

The industry supports and invests in this initiative, which started in Denmark but has also been rolled out in Sweden. Better Home has a network of 3,500 installers – they work closely together with the **top five banks** in Denmark and four utility companies. The model was launched in 2014 and became profitable after just three years, with 200 projects in 2016, and is expected to continue its growth. The indirect turnover of Better Home amounted EUR 13 million in 2017. The dashboard for one-family houses had more than 28,000 unique visits in 2016. Approximately 4% of these visits resulted in a further lead. Average size of refurbishment project is EUR 70,000 and energy savings range between 30%–70%.

The industrial partners (Velux, Grundfos, Danfoss, Rockwool) contribute the **success of the Better Home initiative** due to the following factors:

- clear policy framework (Danish Strategy for energy renovation of buildings of 2014)
- good relationship between the founders – mutual trust and readiness to share the risks
- digital platform
- comfort as a driver
- **link to financial partners**

ESTONIA

Measure/Initiative: KredEx & Loan guarantees in Estonia for EE of residential buildings

Sources: Annual Report 2017[91], KredEx, 2018; Comparative study – The KredEx Revolving Fund in Estonia[92], Energy-Cities, 2014; Estonian NEEAP2017, May 2017; Revolving Fund for energy efficiency in apartment buildings[93], 2016, H2020 Citynvest.
Responsible organisations: KredEx Foundation
Timeline: 2001–ongoing
Lessons to be learned related to effectiveness: KredEx was founded in 2001 by the Ministry of Economic Affairs and Communications. KredEx is a financial institution helping Estonian enterprises to develop faster and expand securely to foreign markets. Hereto, KredEx offers loans, venture capital, credit insurance, and guarantees secured by the state. In addition, they help the residents of Estonia to improve their living conditions, offering them loan guarantees secured by the state for purchasing homes, as well as loans, guarantees, and grants for solutions aimed at improving energy efficiency. (Source: Annual report KredEx 2017)
With the help of its **loan guarantees**, KredEx enables the purchasing of a home at a lower rate of self-financing and ensures the **preservation and energy efficiency of residential buildings**. With housing loan guarantees, young families, young specialists, purchasers of energy-efficient housing, tenants of restituted houses, and veterans can take out loans with a lower rate of self-financing for the purchase or renovation of housing. Residents of apartment buildings can also use the apartment building loan guarantee to make their home energy efficient. Since 2000, 30,307 households have improved their living conditions with the help of KredEx. Besides private households, apartment associations seeking loans from banks to renovate their buildings can apply for a loan guarantee from KredEx. Since 2002, KredEx guarantees have been used with 998 guarantee contracts for the renovation of apartment buildings in the total loan sum of EUR 71.6 million. (Source: Annual report KredEx 2017)
KredEX cooperates with local commercial banks (SEB, Swedbank), which manage the loans and **take decisions on the projects that will be financed**. Swedbank covers up to 75% of the Estonian financial market for multi-apartment buildings. The banks' main motivation to cooperate was to get access to more clients. The banks have also had very good experiences with financing energy refurbishment of multi-family buildings prior to 2009 (reliable clients, no late payments or payment defaults). (Source: NEEAP2017, Energy-Cities, 2014)
KredEx manages & **monitors** the relations with the intermediary banks: **on a monthly basis** KredEx receives specific information from the intermediary banks including information about the building and beneficiaries, description of the investments, the number of dwellings concerned, date of energy audit and possible savings, investment amounts, loan amount and terms and information on additional loans. KredEx has been able to keep the **KredEx Fund's running and administrative costs rather low**, firstly because nearly all expertise is available in-house and also because a lot of the work during the loan application process is being done by the intermediary banks. The intermediary banks are indeed taking investment decisions regarding apartment building investment projects and initiatives of final beneficiaries and handling most of the required administrative formalities of the loan application process up to the drafting and signing of the loan agreement with the final beneficiary. (Source: Citynvest H2020, 2016)

[91] ttp://www.kredex.ee/public/Aastaraamatud/Fund_KredEx_Annual_Report_2017.pdf
[92] http://www.energy-cities.eu/IMG/pdf/infinite_solutions_estonia.pdf
[93] http://www.citynvest.eu/content/kredex

FINLAND

Finland's need to finance EE investments

Sources: National Overview Finland, Päivi Laitila, Motiva presented at Regional conference on Financing Energy Efficiency in Nordic countries[94], May 2017.

Lessons to be learned related to effectiveness: **Financing the energy efficiency in investments in Finland is not the problem.** Indeed, resources are available for economically feasible projects if the applicant is creditworthy. Plus, there is an increasing interest in the topic among banks and financial institutions. This is the result of successful long-term, persistent work for energy efficiency, based on aids granted by the Finnish Government, etc. The Energy Efficiency Agreement (EEA) has a key role in EE implementation.

Measure/Initiative: "Energy efficiency funding" project in Finland

Sources: The information was obtained in the structural dialogue with the Member State.

Responsible organisations: Energy Authority

Timeline: 2017–2018

Short description: In April 2017 the Energy Authority launched a project to establish an overall picture of the energy efficiency funding situation. The project involves **compiling information on available funding instruments** in Finland but also involves working to identify those funding instruments that are problematic or even completely unsuitable for use in Finland. The information is being mapped both for international mechanisms (mainly EU) and for mechanisms in Finland. The project covers both public and private funding opportunities.

The project involves engaging in bilateral conversations with all significant funding institutions operating in Finland. The particular objective of this portion is **to survey the information needs of funding institutions**, in terms of funding for energy efficiency and local renewable energy investments. By the end of January 2018, bilateral discussions had been held with seven funding institutions. Cooperation with some is already underway. The final report for the public portion of the project was published in March 2018.

94 https://ec.europa.eu/energy/sites/ener/files/documents/seif_copenhagen_event_19_may_2017_proceedings_final.pdf

ITALY

Measure/Initiative: Italia in Classe A, three-year information and training programme

Sources: NEEAP2017, June 2017; Analysis and results of energy efficiency policies in Italy[95], ENEA, 2017; Rapporto Annuale sull'Efficienza Energetica 2018[96], ENEA.
Responsible organisations: National Agency for new technologies, energy and sustainable economic development (ENEA)
Timeline: 2016–2018
Short description: "Italia in Classe A" was designed by the Italian National Agency for new technologies, energy and sustainable economic development (ENEA) involving various parties such as Regions, consumer associations, ESCOs and ESCO associations. The information and training activities that are carried out under the programme Italia in Classe A are intended to widely disseminate and raise the awareness and providing tools of energy efficiency savings among end users in various sectors such as large companies, SMEs, public administrations, families, students and banks. The information and training programme and the strategies identified were organised **following an in-depth analysis of the economic, social and regulatory climate**. The main issues identified **for the group of banks and financial institutions** that hamper the implementation of policies but can be addressed through appropriate communication are:

- ROI difficult to quantify;
- Technical assessment of the projects;
- Guaranteed continuity of the business benefiting from the energy saving;
- Regulatory framework;
- Regulatory uncertainty.

The programme is divided into three different stages, each lasting one year:

- Stage 1. Start-up (first year – 2016): involves mass information/communication to provide a basic introduction to energy efficiency and energy savings. Targeted actions are planned for selected recipients.
- **Stage 2. Specific targets** (second year – 2017): the midpoint of the programme, which involves **maximising information coverage** and launching **targeted actions for the recipients** identified under Article 13 of Legislative Decree No 102/2014. Therefore, the programme for 2017 mainly focuses on the configuration, implementation and promotion of macro-projects able to facilitate and boost communication, thus overcoming the main problems and meeting the information needs of the different target groups. Hereto, the second year's operational programme was divided into **four macro-projects for individual targets** (schools, **SMEs and banks**, the public administration and households living in condominiums) and four horizontal multi-target actions (e.g. the Energy Efficiency Month). ENEA indicates that the operational plan implemented in 2017 was structured in terms of gradualness, flexibility, monitoring and constant verification of the achieved results.
  For the group of financial institutions and banks the following specific goals for the second year were set: encourage banks and financial institutions to become involved in financing energy efficiency improvement projects, particularly **by sharing data and experiences of public-private partnerships.**
- Stage 3. Consolidation and testing (third year): consolidation of initiatives, communication of results and analysis of the communication impact.

[95] http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/raee-executive-summary-en.pdf
[96] http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/2018/raee_2018.pdf

Measure/Initiative: Survey to examine the role of the banking sector to support green technologies, ABI Lab

Sources: Rapporto Annuale sull'Efficienza Energetica 2018[97], ENEA.
Responsible organisations: ENEA, ABI Lab (R&D Centre for Banking Technologies Italy)
Timeline: appr. 2017
Short description: As part of the "Banks and Green Economy Observatory", ABI Lab started **a survey to examine the role of the banking sector in supporting and developing green technologies. T**he survey aims to analyse:

- the characteristics of financial products offered by banks for energy efficiency;
- the main target customers;
- the main organisational aspects at the bank to support assessment of loans for performance of energy efficiency initiatives;
- any aspects of the regulatory framework that could assist financing of energy efficiency initiatives;
- planned investments in energy efficiency and in renewable energy sources.

10 banks/banking groups took part in the survey, representing over 70% of the sector in terms of total assets.
Lessons to be learned related to effectiveness: Some results of the survey in short:

- It emerged that **most of the respondents have introduced specific EE financing products**, of which 41 are dedicated, in particular, to the following four customer targets: Industry: SMEs/Mid-CAP; Industry: Large firms; Services (Hotels, the Large-Scale Retail Trade, Sports Centres, Transport, etc.); ESCOs. In addition to this, 62% of the respondents are assessing whether to introduce new financing products for the sector.
- Concerning the regulatory framework (taxation, regulations, incentives, etc.), 60% of the total sample perceives a high or very high level of instability. When asked which **regulatory initiatives would support** the design and use of new financing instruments for energy saving initiatives, the banks indicated: the creation and start of (Basel-compliant) guarantee funds; simplified and clearer regulations, such as those related to the energy efficiency certificates; structural aid with long-term provisions.
- Concerning the processes of supply of energy efficiency financing, the banks indicated the following facilitating elements: increase of the size of the investment and thus reduction of the incidence of costs for technical assessment of the initiative; the guarantee that the activity to which the energy saving relates will continue over time.

Measure/Initiative: Energy Efficiency Award for "Best Innovative financial management" in Italy

Source: Awards and Recognitions, website TerniEnergia, https://www.ternienergia.com/en/about-us/awards-recognitions/
Responsible organisations: CESEF
Timeline: 2016
Short description: TerniEnergia (a smart energy company active in the sectors of renewable energy, energy efficiency, waste and energy management) and Susi Partners AG ("investment advisor" with experience in the development of sustainable energy infrastructure) received the award for "the innovative financial management of an energy efficiency project" thanks to the LEDS project, which stands for Lighting Efficiency Deal Securitisation. For Susi Partner AG it was the first project to securitise loans related to an industrial project. The Energy Efficiency Awards were delivered to Milan by the Managing Director of the Energy Services Manager (GSE), Francesco Sperandini, and the President of ENEA, Federico Testa, during the CESEF 2016 Workshop.

[97] http://www.enea.it/it/seguici/pubblicazioni/pdf-volumi/2018/raee_2018.pdf

Lessons to be learned related to effectiveness: The Energy Efficiency Awards aim to make the best use of the national best practices of the sector and to help the development of the energy efficiency market.

Measure/Initiative: Fund for the purchase and/or renovation of buildings (Plafond casa – soft loans)

Source: NEEAP 2017 Italy
Responsible organisations: Cassa Depositi e Prestiti and the Italian Banking Association
Timeline: 2013–ongoing
Short description: The Fund is intended to finance home purchases through mortgage-backed loans. Priority is given to properties that are the main residence, preferably within energy categories A, B or C, and/or renovations and energy efficiency improvements, with priority given to young couples, households with at least one disabled person and large families. The practical arrangements for the scheme are defined in a specific agreement between Cassa Depositi e Prestiti and the Italian Banking Association.
For the banks, access to the credit line is set to on a first come/first served basis, provided that resources have not been exhausted. Recipients contact one of the **participating banks, which use the funds made available by Cassa Depositi e Prestiti to grant mortgages** for purchase and/or renovation.
More information: https://en.cdp.it/projects/all-projects/read-more/cdp-and-the-financial-institutions.kl

Measure/Initiative: PF4EE to foster energy efficiency investments in Italy – BPER Banca Group: "LIFE4ENERGY"

Sources: PF4EE website[98]
Responsible organisations: The European Investment Bank (EIB) and BPER Banca Group
Timeline: 2017–ongoing
Short description: The European Investment Bank (EIB) and BPER Banca Group are providing EUR 50 million for energy efficiency projects implemented by businesses of all sizes. This is the first project in Italy based on European Commission guarantees and assistance under the Private Finance for Energy Efficiency (PF4EE) EU instrument. The aim of the new EIB/Commission instruments is to generate at least EUR 1 billion in additional energy efficiency investment.
The PF4EE instrument combines three elements: the first element is financing on favourable terms from the EIB to BPER, with the latter managing the selection and distribution of the loans to businesses. The second element is a European Commission guarantee partially covering the risk borne by BPER. The third element consists in providing technical assistance to BPER in order to strengthen its lending activities expressly directed towards energy efficiency investment.
The projects for which businesses can request financing from BPER Banca Group, assisted for the purpose of this agreement by con FISG (Gruppo Banca Finint), must be connected to the energy efficiency of buildings or productive structures, district heating or district cooling plants, public lighting infrastructure, or high efficiency heat and power cogeneration plants.
More information: https://www.bper.it/imprese-professionisti/finanziamenti/agevolati/life4energy

[98] http://www.eib.org/infocentre/press/releases/all/2017/2017-087-eib-and-bper-group-eur-50m-for-energy-efficiency.htm

LITHUANIA

Measure/Initiative: Public Investment Development Agency (VIPA)

Sources: Website VIPA[99]; Financial instruments in Lithuania (ESIF): lessons learned[100], presented by Rūta Dapkutė-Stankevičienė - Deputy Director of the EU Investment Department – Ministry of Finance, Lithuania, 2017.
Responsible organisations: Ministry of Economy, VIPA
Timeline: 2012–ongoing
Short description: The Public Investment Development Agency (VIPA) was established in 2012 by the resolution of the Government of the Republic of Lithuania No. 1428. VIPA is responsible for the provision of financial services, implementation and administration of financial instruments for public sector investment in public infrastructure and public service modernisation. More specifically, VIPA provides guarantees for street lighting modernisation, loans for modernisation of multi-apartment buildings, cultural heritage and public buildings.
Hereto, VIPA is informing and working together with financial institutions and banks. For instance, the **Energy Efficiency Fund** (ENEF), established in 2015 and managed by VIPA, implements two financial instruments, namely loans for financing renovation of central government buildings and guarantees for loans granted by commercial banks for street lighting modernisation projects. VIPA provides **guarantees** to commercial banks and institutional financiers who provide loans for street lighting upgrades. Another example of VIPA's involvement with financial institutions is the consultation of these stakeholders during the ex-ante assessment of the financial instrument put in place.

[99] http://www.vipa.lt/
[100] https://www.interregeurope.eu/fileadmin/user_upload/tx_tevprojects/library/file_1502882334.pdf

THE NETHERLANDS

Measure/Initiative: Green Deals related to Energy in the Netherlands

Sources: Fourth National Energy Efficiency Action Plan for the Netherlands, 30 April 2017; Phone Interviews ABN AMRO Bank &ASN Bank, June 2018; Expertisecentrum Financiering Duurzame Energieprojecten[101].
Responsible organisations: Ministry Economic Affairs, Ministry Infrastructure & Environment, Dutch Banking Association, etc.
Timeline: 2011–ongoing
Short description: The Cabinet entered into Green Deals (**voluntary agreements**) with society for energy, with the emphasis on energy efficiency and local generation of renewable energy. Citizens, companies and others are increasingly finding their own solutions for smarter and more sustainable energy management, for example by saving energy or generating it themselves, or by clean energy use. These are often energy projects that pay for themselves, but they do not always get off the ground. The government helps solve these problems using Green Deals in a number of ways, for example by **giving advice, bringing parties into contact with each other (networking) and removing obstacles in legislation and regulations**. By entering into a Green Deal with initiating parties on a voluntary basis, the government aims to act to solve these problems and give the project a fresh chance. The central idea is that the **government facilitates and accelerates initiatives by removing barriers**. Since the start of the Green Deals in 2011, more than 200 deals have already been signed.
The financial sector has also signed, on a voluntary basis, several Green Deals in the domains of energy efficiency and renewable energy, among which "Green Deal expertisecentrum financiering duurzame energieprojecten (Expertise Centre Sustainable Energy)" signed in 2013. The Expertise Centre brings together technical and financial know-how and shares these with initiators of energy projects and potential financiers (by means of reports, presentations and expert sessions). This knowledge helps **to bring together financing demand and supply** in two ways:

- by providing technical knowledge about energy projects among financiers, the supply of financing is increased;
- By providing developers of energy projects with information about financiers' needs, the demand for financing is formulated more sharply and therefore more promising.

Measure/Initiative: Revolving Fund for Energy Savings (RFE) in the Netherlands

Sources: Fourth National Energy Efficiency Action Plan for the Netherlands, 30 April 2017; Interview Member States' representatives RVO, June 2018; Website National Energy Saving Fund[102].
Responsible organisations: Foundation National Energy Saving Fund (represented by Svn, Stimuleringsfonds Volkshuisvesting Nederlandse gemeenten)
Timeline: 2013–ongoing
Short description: The Central Government uses revolving funds for loans for energy saving measures in the built environment (existing buildings: owner-occupiers, landlords and owners' associations). This measure encourages energy saving and employment and ensures that housing remains affordable for Dutch households if energy prices rise. In 2013 the Ministry of the Interior organised a tender to fund the establishment of the Revolving Fund for Energy Savings (RFE) with funding of 25% public money and 75% private money. The information on the tender to fund the establishment of the Revolving Fund was published in national and international financial newspapers. This way, **multiple financial institutions could participate, by jointly providing up to EUR 225 million in this**

[101] https://www.nvb.nl/thema-s/ondernemen-financieren/1998/expertisecentrum-financiering-duurzame-energieprojecten.html
[102] https://www.energiebespaarlening.nl/over-ons/

RFE. As a result, two banks did participate, so the objective of 75% private funding by financial institutions was realized: Rabobank provided EUR 175 million and ASN bank provided EUR 50 million. Together with EUR 75 million from the government, an RFE of in total EUR 300 million was created for low interest loans for homeowners and associations to take energy saving measures. The amount of loans provided by the Revolving Fund for Energy Savings is monitored by the executive authority, namely Foundation National Energy Saving Fund (represented by Svn).

Lessons to be learned related to effectiveness: Up to the end of 2016, more than 4,200 loans were provided for homeowners and 10 loans for owners' associations (VvEs), at a total amount of EUR 53 million. Important factors explaining the realization and success of this revolving fund with private co-funding were: the organisation of the **tender process, the conditions for funding and the establishment of an independent organisation** for providing the loans to the homeowners (Foundation National Energy Saving Fund).

Measure/Initiative: EscoNetwerk – Information provision towards financial institutions and banks

Sources: Fourth National Energy Efficiency Action Plan for the Netherlands, 30 April 2017; Website EscoNetwerk Nederland[103].

Responsible organisations: EscoNetwerk Nederland

Timeline: 2012–ongoing

Short description: There are various enterprises offering **energy services in the Netherlands**. The independent network organisation Esconetwerk aims to put these parties in a better position to gather information about the provision of energy services and to utilise opportunities in this field. Esconetwerk's focus is on reducing the cost of setting up an energy service provision contract between the energy service provider and the owner, manager and/or user of a building and to increase the quality of the energy saving measures in these buildings. These measures **provide banks and other financial institutions with information** about the possibilities of participating in the financing of measures to improve energy efficiency, by setting up public-private partnerships, for example.

Measure/Initiative: Extending mortgage options for energy saving measures

Sources: Fourth National Energy Efficiency Action Plan for the Netherlands, 30 April 2017; Interview Member States' representatives RVO, June 2018.

Responsible organisations: Dutch government (Ministry of Finance)

Timeline: 2012–ongoing

Short description: Implementation of law on mortgages, also concerning the possibility of getting extra mortgage for energy saving measures: persons with a mortgage who **implement energy saving measures in their own homes are able to borrow an increased sum for that investment**. In December 2012, this new national mandatory scheme for providing mortgages, with rules for banks and financial institutions, was published on the governmental website: http://wetten.overheid.nl/BWBR0032503/2018-01-01 and on the website of the Dutch Banking Association (Nederlandse Vereniging van Banken): https://www.nvb.nl/publicaties/gedragscodes/1936/gedragscode-hypothecaire-financieringen.html.

Lessons to be learned related to effectiveness: The amount of provided mortgages with an increased sum for energy saving measures is growing year by year. The fact that this mortgage fits within the regular financing system can explain this; in addition, it gives the bank the opportunity to alert the homeowners to take into account energy saving measures. At the moment, all large mortgage banks

[103] http://www.esconetwerk.nl/

do offer this extended mortgage option to their clients. The mortgages with extended options for energy saving measures are not monitored by the government.

SPAIN

Measure/Initiative: JESSICA - F.I.D.A.E Fund in Spain

Sources: 2017–2020 National Energy Efficiency Action Plan, May 2018; Phone interview Member States' representatives IDAE (The Institute for Diversification and Saving of Energy), May 2018; El posible uso de Instrumentos Financieros en el ámbito de una economía baja en carbono en España[104], EIB, 2017.
Responsible organisations: European EIB, IDEA and private financial institutions
Timeline: 2011–ongoing
Short description: The FIDAE (Fondo de Inversión en Diversificación y Ahorro de Energía [Energy Diversification and Saving Investment Fund]) is a JESSICA (Joint European Support for Sustainable Investment in City Areas) holding fund with a budget of EUR 123 million, the purpose of which is to finance urban energy efficiency and renewable-energy-use projects within the sectors of construction, industry, transport or energy-related public service infrastructure. It was set up following a financing agreement signed between the European Investment Bank (EIB) and IDAE on 1 July 2011. This holding fund channels finance for eligible projects through three Urban Development Funds **managed by three financial institutions selected by the EIB**, namely Ahorro Corporación Financiera, Banco Bilbao Vizcaya Argentaria (BBVA) and Banco de Santander. The selection of these institutions was carried out using a **public procurement process** to identify qualified professionals with experience and capacity to manage and invest the assets of the UDF.
The communication platforms used for raising awareness on these programmes were the IDAE website and physical pamphlets used in events. Direct information through the involved financial entities was another communication platform.
Lessons to be learned related to effectiveness: The JESSICA-F.I.D.A.E. was not successful at its first stage, but the management of the Ministry of Industry made it possible to achieve the predisposed objectives.
More information: http://www.idae.es/ayudas-y-financiacion/fondo-jessica-fidae

Measure/Initiative: ICO- IDAE EFICIENCIA ENERGÉTICA 2017-2018 Fund in Spain

Sources: Phone interview Member States' representatives IDAE (The Institute for Diversification and Saving of Energy), May 2018.
Responsible organisations: IDEA and Official Credit Institute (ICO)
Timeline: 2017–2018
Short description: This financing line, endowed with EUR 100 million, aims at improving the energy consumption of the hotel industry, as well as of SMEs and large companies in the commercial and industry sector. Up to EUR 70 million go to SMEs and large companies in the Industrial and Commercial sector, and EUR 30 million to the RENOVE Hotel Plan. The Official Credit Institute (ICO) acts as the main contact point, as well as the main provider of the fund towards financial institutions that can subscribe to the different programmes launched within this framework so that these **financial entities facilitate the credits to support the EE projects**. IDAE acts as an intermediate organism for sustainable development. The following financial institutions participate to the programme: Banco de España; Banco Santander; Banco Sabadell; Banco Bilbao Vizcaya Argentaria (BBVA); Grupo Unicaja Banca; Banco Caja España de Inversiones; Caja de Ingenieros; Caja Rural de Granada; Cajasiete; Banco Cooperativo; Caja Rural de Burgos; Caja rural de Teruel and Globalcaja. The communication platforms used for its promotion involve the IDAE website, physical pamphlets, conferences, workshops and direct information through the involved financial entities.

[104] http://www.dgfc.sepg.hacienda.gob.es/sitios/dgfc/es-ES/ipr/fcp1420/e/ee/Documents/Ex_ante_LCE_Spain_informe_final.pdf

A maximum amount per loan of EUR 3 million is provided to SMEs and large companies, and up to EUR 15 million per loan for the hotel industry. Projects must be executed within a period of 24 months in the first case and 12 months in the second case. Up to **50% of the project-related risks are guaranteed by the financial institutions and IDAE** itself through the Energy Efficiency National Fund FNEE.

Lessons to be learned related to effectiveness: It is too early to provide final results.

More information: http://www.idae.es/ayudas-y-financiacion/linea-de-financiacion-ico-idae-eficiencia-energetica-2017-2018