



A Study on Energy Efficiency in Enterprises: Energy Audits and Energy Management Systems

Report on the fulfilment of obligations upon large enterprises, the encouragement of small- and medium-sized companies and on good-practice

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General issues and country analyses: AT, CA, CH, CN, DE, DK, EE, ES, HR, HU, IT, JP, LU, MT, NO, PL, SE, SI, SK, US and other countries.

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This study was ordered and paid for by the European Commission, Directorate-General for Energy. The information and views set out in this study are those of the authors and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission's behalf may be held responsible for the use which may be made of the information contained therein.

The information presented in this study has been collected in the period from March to September 2015 and therefore analysis of this study describes the situation as of late summer 2015.

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Abstract

Article 8 of the Energy Efficiency Directive addresses energy audits and energy management systems in the European Member States. This study provides an overview of the national implementation of Article 8 across the EU-28, covering the situation for both large enterprises and SMEs. The analysis is carried out from a policy-making perspective and describes the situation both at a Member State and an aggregate level as of late summer 2015. For this purpose, the analysis answers a set of key questions by combining the results of an extensive literature review with findings from more than 30 interviews with national experts. The findings include a thorough review of the implementation in the Member States, the instruments used for addressing both target groups, as well as a description of challenges, recommendations and good practice approaches.

Abstract

L'article 8 de la directive 2012/27/UE sur l'efficacité énergétique traite des audits énergétiques et les systèmes de gestion de l'énergie dans les états membres européens. Cette étude résume les mises en œuvre de l'article dans l'UE-28 en couvrant la situation pour les grandes entreprises ainsi que les PME. L'analyse est effectuée d'une perspective politique, et décrit la situation au niveau de l'État membre ainsi qu'au niveau global jusqu'à l'été 2015. Pour cette raison, l'analyse répond à une série des points clés qui couvrent les grandes entreprises et les PME en combinant les résultats d'une revue littéraire étendue et des conclusions qui émanent de plus de 30 entretiens avec des experts nationaux. Les conclusions incluent une revue complète de la mise en œuvre dans les États membres, les instruments utilisés pour cibler les deux groupes ainsi que les descriptions des problèmes, recommandations, et bonnes pratiques.

Executive summary

Background to the study

The improvement of energy efficiency is one of the most cost-effective ways to concurrently improve the security of supply, reduce energy-related emissions, assure affordable energy prices, and improve economic competitiveness. For improving energy efficiency in Europe, the Energy Efficiency Directive (EED; Directive 2012/27/EU) entered into force on 4 December 2012. The EED establishes a common framework of measures across Member States to ensure the achievement of the EU's 20% headline target on energy efficiency by 2020, and to pave the way for further energy efficiency improvements beyond this date. It aims to remove market barriers and failures, and promotes a more efficient use of energy in supply and demand side applications.

The EED covers a large variety of approaches and measures to achieve these aims. In its Article 8, it addresses the requirements and promotion of energy audits and energy management systems. More specifically, it requires Member States to promote and ensure the use of high quality, cost-effective energy audits and energy management systems to all final customers. This covers both large as well as small and medium sized enterprises (SMEs)¹. Whilst large enterprises are required to be subject to an energy audit by 5 December 2015 and at least every four years thereafter, SMEs should be encouraged to undertake energy audits and implement the resulting recommendations.

As a European Directive, the EED is a legal instrument that requires the transposition of its requirements into national laws by Member States. Member States have a degree of liberty in respect of national implementation, provided that the national transposition fulfils the Directive's minimum requirements. The transposition by Member States of the EED including Article 8 was required by the 5 June 2014.

Purpose and approach of the study

The European Commission's role is to assist Member States by supporting the exchange of good practices concerning Article 8. The European Commission issued a note that provides guidance to Member States on the Commission's interpretation of the requirements of Article 8. This report, in turn, is one of several documents prepared as part of a study to further support the European Commission by providing an overview of current implementation practices, tools and instruments related to Article 8 within the different Member States. Its aim is to provide an overview of implementation in respect of both large enterprises and SMEs across the 28 Member States from a policy-making perspective. The analysis is complemented by information from additional territories outside the EU-28, including Canada, China, Japan, Norway, the United States and Switzerland.

With regard to large enterprises, the overall purpose of this report is to analyse the extent to which Member States have transposed the obligations of Article 8 upon large enterprises at the national level. This includes the different approaches used by Member States to identify large enterprises within their jurisdiction, and the means used to track their compliance with the energy audit requirement. With respect to SMEs, the main purpose of this report is to identify and describe good practices in the implementation of energy audits and energy management systems in SMEs. This includes a

¹ The definition of SME is given in Article 2(26) of the EED and the term "large enterprise" used in this report refers to all enterprises that are not SME.

comprehensive analysis of current practices and exchange mechanisms, i.e. systems for bilateral exchange.² The analysis of instruments in this report generally focuses on instruments at the national level that directly and explicitly relate to energy audits, energy management systems or exchange mechanisms for companies, thereby excluding regional programmes, research projects and occasional events.

To analyse the situation for both large enterprises and SMEs, a set of specific key questions was established. Subsequently, these questions were answered by using two main sources of information. The first source of information is a structured review of existing documents and literature pertaining to the implementation of mandatory and voluntary energy audits, energy management systems and, especially for SMEs, exchange mechanisms within the individual Member States. This information was complemented by a series of interviews with experts from national public bodies, implementers, and consulting or research institutions that are familiar with the implementation of Article 8, or with the improvement of energy efficiency in large enterprises and/or SMEs. These interviews aimed to verify and extend the findings from the literature analysis, and to fill information gaps. A total of 30 interviews were carried out for this study.

The findings of this report describe the situation as of late Summer 2015. It should be noted that, for some countries, the transposition and implementation of Article 8 was still in preparation at that time.

Main findings concerning large companies

The main findings from the study concerning the national implementation of Article 8 for large companies can be summarised as follows:

What legislation have the Member States established to meet the obligations of Article 8 for large enterprises?

Member States were expected to fully transpose the Directive into national legislation within a period of roughly 18 months, by June 2014. It was observed that most Member States completed the transposition in 2014 and 2015. However, at the time of preparing this study, five Member States were still in the process of transposing the requirements of Article 8 and the implementation details into their national legislation.

How are large enterprises defined within the national legislation related to Article 8?

While some Member States directly rely on the EU definition of SMEs and adopt the definition of a large enterprise used in the EED as being an enterprise that is not an SME, others employ an explicit definition of large enterprises. Various differences in the definition can therefore be observed across Member States. The definition of SMEs in the EED is based on threshold values for employees and two financial criteria that are linked in a defined way, as well as certain additional criteria for the determination of the status of an enterprise. Some Member States use the employee and financial thresholds according to the EU definition, but they link them in a different way from that stated in the Directive; others have modified the threshold values and some have decided to include additional companies in the mandatory audits, e.g. by introducing an additional energy-related criterion.

² For a more thorough definition, please see section 1.4 of the report.

How are multi-national companies and large enterprises with several sites dealt with in the Member States?

Generally, the Member States deal differently with multi-national and multi-site companies. Some Member States take all company parts located inside and outside their national territory into consideration for determining the status as an SME. Others rely on the company parts inside the national territory only. Whether a company assessed as a non-SME following the aforementioned process is subject to a mandatory audit further depends on whether every site or company part located inside and outside the national territory has to conduct an energy audit. The majority of Member States have limited the scope of the energy audits to company parts located within their national territory.

What kind of activities have the Member States established to promote the use of energy audits and energy management systems in large enterprises?

Instruments addressing the implementation of both audits and energy management systems are mainly focussed on the mandatory requirements as set out by the Directive. Some Member States, however, provide financial incentives for certain activities and sectors (e.g. energy-intensive companies). Furthermore, many countries use different types of events and portals for information exchange as well as tools to help companies in the implementation of both types of activities.

What kind of compliance options and exemptions from regular energy audits are granted to large enterprises in the Member States?

Exemptions under national law from the requirements of the Directive are mainly based on the introduction of an energy or environmental management system. In their national legislation transposing Article 8, some Member States also excluded certain groups, for example companies below a certain energy demand. Some have also allowed longer than four yearly intervals between audits in the event that they are not financially viable.

To what degree have large enterprises currently implemented their regular energy audits in the Member States?

Information on the current implementation in the different Member States is generally scarce. It should also be noted that the number of companies that will be subject to the audits varies considerably across the different Member States, ranging from a number below one hundred to over 50,000 companies.

What administrative processes have the Member States established to monitor large enterprises compliance with legislation and measure the impact of resultant energy efficiency improvements?

Most countries were still in the process of defining how to organise their monitoring processes at the time of preparing this study. The same is true for deciding which data to collect and how to monitor the impact of the audits. Yet preliminary results indicate that some countries expect an active input from the companies subject to a mandatory audit, e.g. by submitting a summary of audit results (e.g. audit data, recommendations) to the responsible authorities, while others intend to verify implementation by checking a random sample of companies.

What kinds of penalties have been established for non-compliance with the provisions of Article 8 for large enterprises?

Penalties for non-compliance vary considerably, ranging from EUR 10,000 to 200,000. It should be noted that penalties imposed by the Member States may be applied to

either a non-compliant company, its management and/or the energy auditor. The majority of Member States intend to penalise companies; a few have decided to impose a penalty at management level (up to EUR 10,000). One country has decided to also impose a penalty on the energy auditor for non-compliant behaviour. Various countries have not yet set a fixed ceiling for penalties and intend to decide them on a case-by-case basis.

Main findings concerning SMEs

The main findings for SMEs concern energy audits, energy management systems and exchange mechanisms.

What kind of supporting framework have the Member States established aimed at providing SMEs with technical assistance and targeted information for energy audits?

An analysis of instruments at Member State level indicates that the Member States rely on numerous approaches to support the implementation of energy audits. These include regulatory instruments, information based instruments, financial instruments and voluntary agreements. The specific type, implementation and design strongly depend on the situation in the individual Member States, such as the general energy and climate policy design, or the relevance of certain SME segments. Various Member States use a mix of policies to address SMEs.

What support schemes for SMEs that cover costs of an energy audit and of the implementation of highly cost-effective recommendations from the energy audits are provided by the Member States?

Support schemes that are in place address partial funding of energy audits or financial support for implementing energy-efficient technologies; they also include low-cost loans for companies. With regard to audit costs, both the covered share of the audit costs as well as the upper absolute ceiling vary and may be up to 80% of the audit costs.

What kind of conditions have the Member States created that aim at providing SMEs with technical assistance and targeted information on energy management?

With regard to information and assistance for implementation, the Member States use the same approaches as for audits. In addition, some Member States provide dedicated tools to help companies with the step-wise implementation of corresponding systems. Various countries have also developed guideline documents to facilitate the implementation process.

What incentives or support schemes have the Member States introduced to implement energy or environmental management systems in SME?

With regard to specific instruments dedicated to energy management systems, fewer countries tend to address this area as compared to funding for energy audits. Most of the existing instruments concerning energy management are financial instruments while there are also regulatory approaches, voluntary agreements and information-based approaches in some countries.

How have Member States engaged with organisations representing SMEs to demonstrate how energy management systems could help their businesses?

There is no general approach that is used across Member States as the institutional structures differ between countries. However, many Member States try to maintain close contact with industrial associations and representatives, e.g. trade organisations

or chambers of commerce, setting up or organising joint events on energy-related matters.

What specifically has been done to raise awareness and expertise among SMEs?

The use of formalised and structured information exchange mechanisms is limited to comparatively few Member States. Many Member States rely on less formal systems for information exchange both between companies and the government. These approaches include discussion platforms, websites and portals, information events (e.g. conferences, seminars, presentations and workshops), awards, help lines or desks, printed and online resources, the provision of local contacts/offices.

What types of organisations that represent SMEs can contribute to the exchange of information?

The analysis of the implementation of exchange mechanisms in the Member States suggests that support by key institutions from industry and from the government (e.g. trade associations, chambers of commerce, service providers, energy utilities) can effectively facilitate the exchange of information as these institutions often have more direct access to SMEs as they often are their first contact point.

How has the European Commission assisted Member States by supporting the exchange of good practices?

Generally, the provision of the guidance note, as well as the activity of the Concerted Action working group, have been perceived as the main support mechanisms provided by the European Commission so far. While both approaches are generally considered as helpful by the Member States, it has been pointed out that a faster provision of the guidance note, as well as a more intensive exchange on different issues related to the implementation of the EED, e.g. on the definition of companies, issues related to transport or on the identification of multi-national companies, would have been welcome to facilitate and accelerate the implementation process.

Conclusions for further enhancing the implementation of Article 8

The analysis of the implementation of Article 8 at the level of individual Member States during this study has revealed a set of challenges for public institutions as well as for companies. Based on these challenges, a set of recommendations and, where available, good practice approaches have been developed for further enhancing the implementation of Article 8 within the EU-28. An overview of the challenges, recommendations and good practice examples is provided in Figure 1.



Figure 1: Overview of challenges, recommendations and good practice related to the implementation of Article 8.

Executive summary

Le contexte de l'étude

Augmenter l'efficacité énergétique est l'un des moyens les plus rentables d'améliorer simultanément la sécurité énergétique, de réduire les émissions liées à la consommation de l'énergie, d'assurer des prix abordables pour l'énergie, et d'améliorer la compétitivité économique. Pour augmenter l'efficacité énergétique en Europe, la directive 2012/27/UE est entrée en vigueur le 4 Décembre 2012. La directive établit un cadre commun de mesures dans les États membres pour assurer la réalisation de l'objectif de 20 % d'ici 2020 et ouvrir la voie à de nouvelles améliorations d'efficacité énergétique au-delà de cette date. Elle vise à éliminer les obstacles liés au marché et favorise une utilisation plus efficace de l'énergie dans les applications tant du côté l'offre que de la demande.

La directive couvre une grande variété d'approches et de mesures visant à atteindre ces objectifs. Dans son article 8, la directive répond aux exigences et à la promotion des audits énergétiques et des systèmes de gestion de l'énergie. Plus précisément, il faut promouvoir et garantir l'utilisation des systèmes de gestion de l'énergie de haute qualité, ainsi que des audits énergétiques rentables pour tous les consommateurs. Cela comprend aussi bien les grandes entreprises ainsi que les petites et moyennes entreprises (PME). Alors que les grandes entreprises doivent faire un audit énergétique à partir du 5 Décembre 2015 et au moins une fois tous les quatre ans par la suite, les PME devraient être encouragées à faire des audits énergétiques et à mettre en œuvre les recommandations qui en résultent.

La directive européenne pour l'efficacité énergétique est un instrument juridique qui exige la transposition de ses dispositions dans la législation nationale des États membres, leur offrant un certain degré de liberté concernant la mise en œuvre nationale, à condition que la transposition réponde aux exigences minimales de la directive. La transposition nationale de la directive, y compris son article 8, était exigée avant le 5 Juin 2014.

But et approche de l'étude

Le rôle de la Commission européenne est d'aider les États membres en favorisant l'échange des meilleures pratiques relatives à l'article 8. Entre autres, la Commission européenne a publié une note qui aide les États membres dans l'interprétation des exigences de l'article 8 par la Commission européenne. Ce rapport fait partie de plusieurs documents élaborés dans une étude pour la Commission européenne en fournissant un aperçu des pratiques, outils, et instruments actuels de mise en œuvre relatifs à l'article 8 de la directive au sein des différents États membres. Son but est de donner un aperçu de la mise en œuvre de l'article 8 de la directive dans les grandes entreprises et les PME à travers les 28 États membres dans une perspective d'élaboration de politiques. L'analyse est complétée par des informations provenant d'autres pays en dehors de l'UE-28 y compris le Canada, la Chine, le Japon, la Norvège, les États-Unis et la Suisse.

En ce qui concerne les grandes entreprises, l'objectif global de ce rapport est d'analyser la mesure dans laquelle l'État membre a transposé l'obligation de l'article 8 pour les grandes entreprises à l'échelle nationale. Cela comprend une identification des différentes approches utilisées par les États membres pour identifier les grandes entreprises dans leurs juridictions respectives et les moyens utilisés pour le suivi de leur conformité à l'obligation d'audit énergétique de l'article 8. En ce qui concerne les PME, l'objectif principal de ce rapport est d'identifier et de décrire les meilleures pratiques

concernant la mise en œuvre des audits énergétiques et des systèmes de gestion de l'énergie dans les PME. Cela comprend une analyse exhaustive des pratiques actuelles et des mécanismes d'échange pour les PME, c'est-à-dire des systèmes d'échange bilatéraux³. L'analyse des instruments dans ce rapport se concentre généralement sur les instruments à l'échelle nationale qui se rapportent directement et explicitement à des audits énergétiques, systèmes de gestion de l'énergie ou des mécanismes d'échange dans les entreprises, excluant ainsi les programmes régionaux, des projets de recherche et des événements occasionnels.

Pour analyser la situation pour les grandes entreprises et les PME, une série de questions clés spécifiques a été définie pour les groupes abordés plus loin. Par la suite, ces questions ont été posées aux entreprises à l'aide de deux principales sources d'information : La première source d'information est un examen structuré des documents et de la littérature relative à la mise en œuvre d'audits énergétiques obligatoires et encouragés, des systèmes de gestion de l'énergie et, en particulier pour les PME, des mécanismes d'échange dans les différents États membres. Les informations obtenues de cette manière ont été complétées par une série d'entretiens avec des experts d'organismes publics nationaux, d'entreprises de conseil et d'institutions de recherche qui sont familiers avec la mise en œuvre de l'article 8 et l'amélioration de l'efficacité énergétique dans les grandes entreprises et / ou les PME. Ces entretiens visaient à vérifier et étendre les résultats de l'analyse de la littérature et de combler les lacunes d'information. Trente entretiens ont été réalisés au total pour cette étude.

La conclusion de ce rapport décrit la situation à partir de l'été 2015. Il convient de noter que, pour certains pays, la transposition et la mise en œuvre étaient encore en préparation au moment de l'étude.

Principales conclusions concernant les grandes entreprises

Les principales conclusions de l'étude concernant la mise en œuvre nationale de l'article 8 pour les grandes entreprises peuvent se résumer comme suit:

Quelles lois les États membres ont-ils mis en place pour répondre aux obligations de l'article 8 pour les grandes entreprises ?

Les États membres devaient transposer intégralement la directive dans la législation nationale dans un délai d'environ 18 mois, pour Juin 2014. On peut observer que la plupart des États membres l'ont transposée en 2014 et 2015. Cependant, au moment de la préparation de cette étude, cinq États membres étaient encore dans le processus de la transposition de l'article 8 dans leur législation nationale.

Comment les grandes entreprises sont-elles définies dans la législation nationale relative à l'article 8 ?

Alors que certains États membres comptent directement sur la définition de l'UE des petites entreprises et adoptent la définition non-PME utilisée dans la directive sur l'efficacité énergétique, d'autres utilisent une définition explicite des grandes entreprises. La majorité des États membres utilise la définition alignée avec la directive, mais certaines différences dans la définition peuvent être observées dans les États membres. Selon la directive, la définition d'une PME est basée sur des seuils d'employés et sur deux critères financiers (chiffre d'affaire et bilan total) qui sont liés entre eux d'une façon définie, ainsi que sur d'autres considérations. Certains États membres utilisent des seuils d'employés et du chiffre d'affaire selon la définition de

³ Pour une définition plus élaborée, voir la section 1.4 du rapport.

l'UE, mais ils les lient d'une manière différente de celle spécifiée dans la directive ; d'autres ont modifié les valeurs de seuil et d'autres encore ont décidé d'inclure des critères supplémentaires tels que l'introduction d'un seuil de consommation énergétique.

Comment les entreprises multinationales et les grandes entreprises avec plusieurs sites sont-elles traitées dans les États membres concernant la mise en œuvre des audits énergétiques réguliers ?

En général, les États membres traitent de manière différente les entreprises multinationales et multi-sites. Certains États membres prennent en considération toutes les parties de l'entreprise situées à l'intérieur et à l'extérieur de leur territoire national pour la détermination du statut de PME. D'autres comptent uniquement les parties de l'entreprise à l'intérieur du territoire national, excluant ainsi les parties situées dans d'autres pays. Qu'une entreprise évaluée comme non-PME suite au processus mentionné ci-dessus soit soumise ou non à un audit obligatoire dépend en outre du fait que chaque site ou partie de l'entreprise située à l'intérieur ou à l'extérieur du territoire national doit effectuer un audit énergétique ou non. La majorité des États membres ont limité le cadre aux parties de l'entreprise situées à l'intérieur de leur territoire national.

Quel genre d'activités les États membres ont-ils mises en place pour promouvoir l'utilisation des audits énergétiques et les systèmes de management de l'énergie dans les grandes entreprises ?

Les instruments concernant la mise en œuvre aussi bien des audits que des systèmes de management de l'énergie sont principalement axés sur les exigences obligatoires énoncées par la directive. Certains États membres, cependant, fournissent des avantages financiers pour certaines activités et secteurs (par exemple, pour les entreprises à forte intensité énergétique). En outre, de nombreuses entreprises utilisent différents types d'événements et de portails d'échange d'informations, ainsi que des outils pour aider les entreprises dans la mise en œuvre des deux types d'activité.

Quel genre d'options de conformité et d'exemptions des audits énergétiques réguliers sont accordés aux grandes entreprises dans les États membres ?

Les exemptions de la directive sont principalement basées sur l'introduction d'un système de gestion de l'énergie ou de l'environnement dans la mesure permise par la directive. Dans leur législation nationale transposant l'article 8, certains États membres ont également exclu certains groupes, par exemple les entreprises en dessous d'une certaine demande d'énergie. D'autres ont autorisé des intervalles plus longs que quatre ans entre les audits, dans le cas où ils ne seraient pas rentables.

Dans quelle mesure les grandes entreprises ont-elles mis en œuvre leurs audits énergétiques réguliers dans les États membres ?

Les informations sur la mise en œuvre actuelle dans les différents États membres sont généralement rares. Il convient également de noter que le nombre d'entreprises qui seront soumises aux audits varient considérablement entre les différents États membres, allant d'un chiffre de moins de cent à plus de 50.000 entreprises.

Quels processus administratifs les États membres ont-ils mis en place pour surveiller la conformité des grandes entreprises avec la législation et de mesurer l'impact des améliorations de l'efficacité énergétique qui en résultent ?

La plupart des pays étaient encore en train de définir l'organisation de la surveillance au moment de la préparation de cette étude. La même chose est vraie concernant la définition des données à recueillir et la façon de surveiller l'impact des audits. Néanmoins, les résultats préliminaires indiquent que certains pays imposent la soumission d'un rapport par les sociétés soumises à un audit obligatoire aux autorités responsables, par exemple un résumé des résultats de l'audit, tandis que d'autres ont l'intention de vérifier la mise en œuvre en vérifiant un échantillon aléatoire de sociétés.

Quel type de sanctions a été établi pour non-conformité aux dispositions de l'article 8 pour les grandes entreprises ?

Les sanctions pour non-conformité varient considérablement, allant de 10.000 euros à 200.000 euros. Il convient de noter que les sanctions imposées par les États membres peuvent être adressées à la société non-conforme, à sa direction et / ou à l'auditeur énergétique. La majorité des États membres ont tendance à pénaliser les entreprises ; quelques-uns ont décidé d'imposer les sanctions à la direction jusqu'à 10.000 EUR. Un pays a décidé d'imposer ses sanctions à l'auditeur énergétique. Plusieurs pays n'ont pas encore fixé un plafond et décident au cas par cas.

Principales conclusions concernant les PME

Les principales conclusions pour les PME concernant les audits énergétiques, les systèmes de gestion de l'énergie et les mécanismes d'échange peuvent se résumer comme suit :

Quel type de cadre favorable les États membres ont-ils établis visant à leur fournir une assistance technique et des informations ciblées pour les audits énergétiques ?

Une analyse des instruments au niveau de l'État membre indique que les États membres ont recours à de multiples approches pour soutenir la mise en œuvre des audits énergétiques. Ces instruments comprennent des instruments de régulation, d'information, des instruments financiers ainsi que des accords volontaires. Le type, la mise en œuvre, et la conception spécifique de ces instruments dépendent fortement de la situation dans les différents États membres, tels que la politique énergétique et climatique générale ou la pertinence de certains segments des PME. Divers États membres utilisent une combinaison de politiques pour les PME.

Quels programmes de soutien pour les PME sont fournis par les États membres pour couvrir les coûts d'un audit énergétique et la mise en œuvre des recommandations les plus rentables de l'audit énergétique ?

Les programmes de soutien qui sont en place adressent un financement partiel des audits énergétiques ou un soutien financier pour la mise en œuvre de technologies d'efficacité énergétique; ils comprennent également des prêts à taux avantageux pour les entreprises. En ce qui concerne le soutien aux coûts des audits, aussi bien leur taux de couverture que leur plafond absolu varient et le taux peut atteindre 80% des coûts d'audit.

Quel genre de structures les États membres ont-ils créés visant à fournir aux PME une assistance technique et des informations ciblées sur la gestion de l'énergie ?

En ce qui concerne l'information et l'assistance pour la mise en œuvre de la gestion de l'énergie, les États membres utilisent essentiellement les mêmes approches que pour les audits. En outre, certains États membres fournissent des outils dédiés pour aider les entreprises dans la mise en œuvre progressive des systèmes correspondants. Cer-

tains pays ont également élaboré des documents d'orientation qui doivent faciliter le processus de mise en œuvre dans leurs pays respectifs.

Quels avantages ou programmes de soutien les États membres ont-ils initié pour mettre en œuvre des systèmes de gestion de l'énergie ou de l'environnement dans les PME?

En ce qui concerne les instruments spécifiques dédiés à des systèmes de gestion de l'énergie, moins de pays ont tendance à aborder ce domaine plutôt que le financement des audits énergétiques. La plupart des instruments existants en matière de gestion de l'énergie sont des instruments financiers mais il y a aussi des approches de régulation, des accords volontaires et, dans certains pays, des outils d'information.

Comment les États membres ont-ils interagi avec les organisations représentant les PME afin de démontrer comment les systèmes de gestion de l'énergie pourraient aider leurs entreprises?

Il n'y a pas d'approche générale qui est utilisée dans les États membres puisque les structures institutionnelles diffèrent entre les États. Toutefois, de nombreux États membres tentent de maintenir un contact étroit avec des associations et des représentants industrielles, par exemple les organisations professionnelles ou chambres de commerce, en mettant en place des événements relatifs à l'énergie avec les participants.

Qu'est-ce qui a été fait spécifiquement pour sensibiliser et augmenter l'expertise pour les PME?

L'utilisation de mécanismes d'échange formalisés et structurés est limitée à peu d'États membres. De nombreux États utilisent des systèmes moins formels pour l'échange d'informations entre les entreprises et le gouvernement. Ces approches comprennent par exemple des plateformes de discussion, des sites Web et des portails, des événements d'information (par exemple des conférences, des séminaires, des présentations, des ateliers), des prix de performance énergétique, des services d'assistance, des guides imprimés ou en ligne, la fourniture de contacts / bureaux locaux, etc.

Quels types d'organisations représentant les PME peuvent contribuer à l'échange d'information?

L'analyse de la mise en œuvre des mécanismes d'échange dans les États membres suggère que le soutien par les institutions clés (associations commerciales, telles que chambres de commerce, prestataires de service, fournisseurs d'énergie) peut considérablement faciliter l'échange d'information car ces institutions ont un accès plus direct aux PME et sont souvent leur premier point de contact.

Comment la Commission européenne a-t-elle aidé les États membres en soutenant l'échange de bonnes pratiques ?

En général, la mise à disposition de la note d'orientation, ainsi que le groupe de travail spécifique de l'Action Concertée, ont été perçus comme les principaux mécanismes de soutien par la Commission Européenne. Bien que les deux approches sont généralement considérées comme utiles par les États membres, il a été souligné qu'une mise à disposition plus rapide de la note d'orientation ainsi qu'un échange plus intensif sur différentes questions liées à la mise en œuvre de la directive (par exemple sur la définition des entreprises, les questions liées au transport ou à l'identification des entre-

prises multinationales) auraient été bénéfiques pour faciliter et accélérer le processus de mise en œuvre.

Conclusions pour améliorer la mise en œuvre de l'article 8

L'analyse de la mise en œuvre de l'article 8 au niveau des différents États membres au cours de cette étude a révélé un ensemble de défis pour les institutions publiques, ainsi que pour les entreprises dans les États membres. Sur la base de ces défis, une série de recommandations ont été développés ainsi que - lorsqu'elles sont disponibles - de bonnes approches pratiques pour améliorer la mise en œuvre de l'article 8 dans les États membres de l'UE. Un aperçu des défis, des recommandations et des exemples de bonnes pratiques est fourni dans la Figure 2.



Figure 2: Vue d'ensemble des défis, des recommandations et des bonnes pratiques liées à l'application de l'article 8.

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1. Introduction

1.1. Background

Europe 2020 is the EU's growth strategy that aims to ensure a smart, sustainable and inclusive economy, driven by five interrelated headline targets. These targets address education, employment, poverty and social exclusion, research and development as well as climate change and energy. With regard to the latter, specific targets include achieving 20% of energy supply from renewable sources, a reduction of greenhouse gas emissions of at least 20% as compared to 1990 levels, and an increase of energy efficiency by 20% as compared to a baseline projection.

Improving energy efficiency is generally considered to be one of the most cost-effective ways to concurrently improve the security of supply, reduce energy-related emissions, assure affordable energy prices, and improve economic competitiveness. Conclusions of a review concerning the progress in the European Union (EU) towards the 2020 energy efficiency target indicated that the EU was not on track to achieve the target. Consequently the European Commission (EC) decided to update the legal framework on energy efficiency. As a means to do so, the Energy Efficiency Directive (EED; Directive 2012/27/EU) entered into force on 4 December 2012.

The EED establishes a common framework of measures for the promotion of energy efficiency within Member States (MS), to ensure achievement of the 20% headline target on energy efficiency by 2020, and to pave the way for further energy efficiency improvements beyond 2020. It aims to remove market barriers and failures, and promote a more efficient use of energy in supply and demand side applications. The EED covers a wide variety of approaches and measures to achieve these aims. These include indicative national energy efficiency targets, renovation strategies, energy-efficient public purchase requirements, energy efficiency obligation schemes, and improvements to customer metering and billing.

As a key element of the Directive, the EED's Article 8 addresses the requirements for and promotion of energy audits and energy management systems. Energy audits were already addressed in predecessors to the EED, especially in Article 12 of the Energy Service Directive (ESD; Directive 2006/32/EC). However Article 8 of the EED puts a more pronounced focus on the implementation of energy audits and also addresses energy management systems. More specifically, it requires Member States to promote and ensure the use of high quality, cost-effective energy audits and energy management systems. This covers both large as well as small and medium enterprises (SMEs). Whilst large enterprises are required to be subject to an energy audit by 5 December 2015 and at least every four years after that date, SMEs should be encouraged to undertake energy audits and implement the resulting recommendations. Annex VI to the Directive sets out minimum criteria for energy audits.

As a European Directive, the EED is a legal instrument that requires the transposition of its requirements into national laws by Member States. In contrast with a European Regulation, which is legally binding without national transposition, the EED as a Directive provides Member States with a certain degree of liberty in respect of implementation, provided that the transposition fulfils the minimum requirements as stated in the Directive. Given this, a Member State may for example set stricter requirements than required by the EED. The transposition by Member States of the EED, including Article 8, into national legislation was required by 5 June 2014.

The following boxes provide the text of EED Article 8 and Annex VI.

Article 8 EED: Energy audits and energy management systems

1. Member States shall promote the availability to all final customers of high quality energy audits which are cost-effective and:
 - (a) carried out in an independent manner by qualified and/or accredited experts according to qualification criteria; or
 - (b) implemented and supervised by independent authorities under national legislation.

The energy audits referred to in the first subparagraph may be carried out by in-house experts or energy auditors provided that the Member State concerned has put in place a scheme to assure and check their quality, including, if appropriate, an annual random selection of at least a statistically significant percentage of all the energy audits they carry out.

For the purpose of guaranteeing the high quality of the energy audits and energy management systems, Member States shall establish transparent and non-discriminatory minimum criteria for energy audits based on Annex VI.

Energy audits shall not include clauses preventing the findings of the audit from being transferred to any qualified/accredited energy service provider, on condition that the customer does not object.

2. Member States shall develop programs to encourage SMEs to undergo energy audits and the subsequent implementation of the recommendations from these audits.

On the basis of transparent and non-discriminatory criteria and without prejudice to Union State aid law, Member States may set up support schemes for SMEs, including if they have concluded voluntary agreements, to cover costs of an energy audit and of the implementation of highly cost-effective recommendations from the energy audits, if the proposed measures are implemented.

Member States shall bring to the attention of SMEs, including through their respective representative intermediary organisations, concrete examples of how energy management systems could help their businesses. The Commission shall assist Member States by supporting the exchange of best practices in this domain.

3. Member States shall also develop programs to raise awareness among households about the benefits of such audits through appropriate advice services.

Member States shall encourage training programs for the qualification of energy auditors in order to facilitate sufficient availability of experts.

4. Member States shall ensure that enterprises that are not SMEs are subject to an energy audit carried out in an independent and cost-effective manner by qualified and/or accredited experts or implemented and supervised by independent authorities under national legislation by 5 December 2015 and at least every four years from the date of the previous energy audit.

5. Energy audits shall be considered as fulfilling the requirements of paragraph 4 when they are carried out in an independent manner, on the basis of minimum criteria based on Annex VI, and implemented under voluntary agreements concluded

between organisations of stakeholders and an appointed body and supervised by the Member State concerned, or other bodies to which the competent authorities have delegated the responsibility concerned, or by the Commission.

Access of market participants offering energy services shall be based on transparent and non-discriminatory criteria.

6. Enterprises that are not SMEs and that are implementing an energy or environmental management system - certified by an independent body according to the relevant European or International Standards - shall be exempted from the requirements of paragraph 4, provided that Member States ensure that the management system concerned includes an energy audit on the basis of the minimum criteria based on Annex VI.
7. Energy audits may stand alone or be part of a broader environmental audit. Member States may require that an assessment of the technical and economic feasibility of connection to an existing or planned district heating or cooling network shall be part of the energy audit.

Without prejudice to Union State aid law, Member States may implement incentive and support schemes for the implementation of recommendations from energy audits and similar measures.

Annex VI EED: Minimum criteria for energy audits including those carried out as part of energy management systems

The energy audits referred to in Article 8 shall be based on the following guidelines:

- (a) be based on up-to-date, measured, traceable operational data on energy consumption and (for electricity) load profiles;
- (b) comprise a detailed review of the energy consumption profile of buildings or groups of buildings, industrial operations or installations, including transportation;
- (c) build, whenever possible, on life-cycle cost analysis (LCCA) instead of Simple Payback Periods (SPP) in order to take account of long-term savings, residual values of long-term investments and discount rates;
- (d) be proportionate, and sufficiently representative to permit the drawing of a reliable picture of overall energy performance and the reliable identification of the most significant opportunities for improvement.

Energy audits shall allow detailed and validated calculations for the proposed measures so as to provide clear information on potential savings.

The data used in energy audits shall be storable for historical analysis and tracking performance.

1.2. Aim

The European Commission (EC) has a role in assisting Member States by supporting the exchange of good practices concerning the transposition and implementation of Article 8 of the Energy Efficiency Directive (EED). The EC has issued guidance on this, including a Guidance Note for Member States on the EC's interpretation of the requirements of Article 8.⁴

This report, in turn, is one of several documents prepared during a study to support the EC in its aims by providing an overview of current implementation practices, tools and instruments related to Article 8 within the different Member States. The specific purpose of this report is to provide an overview of the implementation of Article 8 in respect of both large enterprises and SMEs across Member States and beyond from a policy-making perspective. In this sense, it has not been designed as a study on legal compliance, but to highlight the commonalities and differences in national approaches to implementation by Member States. Other reports prepared as part of this study address the implementation of national minimum criteria for energy audits⁵, the qualification of energy auditors⁶ and typical energy audit recommendations.⁷

The data for this report was collected during the period March to September 2015, and so describes the situation as of late summer 2015. It should be noted that for some countries, transposition and implementation was still undergoing at this point in time. Furthermore, the data compiled in this study is based on information that was either available through public sources or was provided by national experts and contacts. This report updates and considerably extends previous studies on energy audit and energy management programmes in Europe and beyond. These include, amongst others, the publications by Serrenho et al.⁸, Eurochambres⁹, Toivanen et al.¹⁰, Price et al.¹¹ and others cited accordingly.

With regard to large enterprises, the overall purpose of this report is to analyse how each Member State has interpreted and transposed the relevant obligations of Arti-

⁴ European Commission (ed.) (2013): Commission Staff Working Document. Guidance note on Directive 2012/27/EU on energy efficiency, amending Directives 2009/125/EC and 2010/30/EC, and repealing Directives 2004/8/EC and 2006/32/EC. Article 8: Energy audits and energy management systems. SWD(2013) 447 final.

⁵ Eaton, R. (2016): A Study on Energy Efficiency in Enterprises: Energy Audits and Energy Management Systems. Implementation of national minimum criteria for energy audits, in line with Annex VI of the Energy Efficiency Directive. Report for the European Commission; under preparation at the time of writing.

⁶ Brems, A. (2016a): A Study on Energy Efficiency in Enterprises: Energy Audits and Energy Management Systems. Report on the qualification of energy auditors in all Member States. Report for the European Commission ; under preparation at the time of writing.

⁷ Brems, A. (2016b): A Study on Energy Efficiency in Enterprises: Energy Audits and Energy Management systems. Library of typical energy audit recommendations, costs and savings. Report for the European Commission; under preparation at the time of writing.

⁸ Serrenho, T. et al. (2015): Survey of energy audits and energy management systems in the Member States. Preparation of the transposition of the Energy Efficiency Directive in Member States. Online: http://publications.jrc.ec.europa.eu/repository/bitstream/JRC95432/survey%20of%20energy%20audits%20and%20energy%20management%20systems%20in%20the%20member%20states_pub.pdf. Accessed: 16.02.2016.

⁹ Eurochambres (ed.) (2015): Energy Audits for Europe. Assessment of the transposition of Article 8 of the Energy Efficiency Directive (2012/27/EU) into Member State legislation. Online: <http://www.eurochambres.eu/content/default.asp?PageID=1&DocID=7042>. Accessed: 07.08.2015.

¹⁰ Toivanen, J. et al. (2015): Encouraging SMEs to undergo energy audits and the subsequent implementation of the recommendations from these energy audits. Concerted Action. Online: <http://www.ca-eed.eu/themes/energy-services-ct5/energy-services-executive-summary-5.5>. Accessed: 16.02.2016.

¹¹ Price, L.; Lu, H. (2011): Industrial energy auditing and assessments: A survey of programs around the world. Proceedings of the ECEEE 2011 Summer Study. Online: http://proceedings.eceee.org/papers/proceedings2011/3-049_Price.pdf. Accessed: 16.02.2016.

cle 8. This includes the approaches used by Member States to identify large enterprises within their jurisdiction and the means used to track their compliance with the regular energy audit requirement of Article 8. There are particular challenges with the implementation of Article 8 for large enterprises that operate in multiple Member States, and therefore may be subject to multiple and varying legislative requirements across Europe.

This report provides examples of good practice in the implementation of energy audits in large enterprises in different Member States and how they relate to the fulfilment of the requirements of Article 8. For this purpose, the following key questions have been used to identify, structure and analyse the information available for each country:

- **Framework:** What is the legal framework for large organisations with regard to the implementation of Article 8 of the EED in the Member State? Specifically:
 - What legislation has the Member State established to meet the obligations of Article 8 for large enterprises?
 - How are large enterprises defined within the national legislation related to Article 8?
 - How are multi-national companies and large enterprises with several sites dealt with in the Member State?
- **Implementation:** What is the current status of implementation concerning large enterprises? Specifically:
 - What kind of activities has the Member State established to promote the use of energy audits and energy management systems in large enterprises?
 - What kind of compliance options and exemptions from regular energy audits are granted to large enterprises in the Member State?
 - To what degree have large enterprises currently implemented their regular energy audits in the Member State?
- **Enforcement:** What kind of mechanisms has the Member State established to monitor and to assure compliance with the requirements of Article 8? Specifically:
 - What administrative processes has the MS established to monitor large enterprises' compliance with legislation and measure the impact of resultant energy efficiency improvements?
 - What kinds of penalties have been established for non-compliance with the provisions of Article 8 for large enterprises?

With regard to activities related to SMEs, the overall purpose of this report is to identify and describe good practices in the implementation of energy audits and energy management systems. This includes a comprehensive analysis of current practices and exchange mechanisms addressing SMEs.

For this purpose, a set of specific questions concerning SMEs has been used in this study to allow for a structured discussion of the current practices, tools and instruments within each Member State:

- **Energy audits:** What has the Member State done to encourage or compel SMEs to undergo energy audits and subsequently implement the recommendations from these audits? Specifically:
 - What kind of supporting framework has the Member State established aimed at providing SMEs with technical assistance and targeted information?

- What support schemes are provided by the Member State for SMEs that assist with the costs of energy audits and the implementation of cost-effective recommendations from the energy audits?
- **Energy management systems:** What has the Member State done to encourage or compel SMEs to implement energy or environmental management systems? Specifically:
 - What kind of conditions has the Member State created that aim at providing SMEs with technical assistance and targeted information?
 - What incentives or support schemes has the Member State introduced to implement energy or environmental management systems within SMEs?
 - How has the Member State engaged with organisations representing SMEs to demonstrate how energy management systems could help their businesses?
- **Exchange mechanisms:** What other activities has the Member State put in place to establish a framework for overcoming market barriers and failures by means of exchange mechanisms? Specifically:
 - What specifically has been done to raise awareness and expertise among SMEs?
 - What types of organisation that represent SMEs can contribute to the exchange of information?
 - How has the European Commission assisted Member States by supporting the exchange of good practices?

1.3. Methodology

The analysis against the key questions is based on two main sources of information. The first element is a structured review of existing documents and literature pertaining to the implementation of energy audits, energy management and, especially for SMEs, exchange mechanisms within the individual Member States. Within this step, an identification and review of relevant literature, databases and other material (e.g. National Energy Efficiency Action Plans, EED implementation reports) has been carried out. This serves as a means to provide a preliminary description of current practice in Member States regarding implementation activities for energy audits and energy management systems amongst all organisations.

This information has been complemented by interviews with relevant experts on a per Member State basis. These interviews were designed to fill information gaps that could not be closed by the literature review either due to a lack of relevant or up to date literature. Furthermore, the interview results serve to verify the preliminary findings. Interviewees were chosen based on data gaps and do not represent an even or representative split over each Member State. The interviewees were either familiar with the implementation of Article 8 or with the improvement of energy efficiency in large and SME organisations. They originate from different institutions such as national public bodies, implementation agencies, and consulting or research institutions. All interviews were based on semi-structured guidelines for the interviewers. More than 30 interviews have been undertaken for this study.

Generally, there are various instruments addressing energy efficiency in many Member States. The analysis of instruments by Member State in this report focuses on those operating at a national level that directly and explicitly relate to energy audits, energy management systems in companies or exchange mechanisms. Regional pro-

grammes are only covered if they address in sum all regions of a Member State, means that all regions of the Member State have programmes applied only locally but which together cover the entire country. General activities by Member States to improve energy efficiency without a direct link to these topics are not addressed in this report, e.g. funding programmes for introducing highly efficient technologies, equipment or general research activities to improve energy efficiency. Separate obligations or instruments beside Article 8 of the EED regarding audits for buildings are also outside the scope of this report, since they are addressed in other parts of the Directive or concern other Directives such as the Energy Performance of Buildings Directive (EPBD; Directive 2010/31/EU). However, specific provisions for buildings made by Member States within the context of Article 8 have been analysed. The reader is also referred to the other reports of this study for specific information on minimum criteria for energy audits, the qualification of energy auditors and typical energy audit recommendations.

1.4. Terms and definitions

As a prerequisite to the analysis, a set of terms and definitions needs to be established.

1.4.1. SMEs and large companies

Defining the difference between large companies and SMEs is essential as the mandatory audits of EED Article 8 only apply to enterprises "*that are not SMEs*". In Article 2(26) of the EED, SMEs are explicitly defined with reference to the Commission Recommendation 2003/361/EC of 6 May 2003. The SME definition is illustrated in Table 1.

Article 2(26) of the EED: Definition of an SME

'Small and medium-sized enterprises' or 'SMEs' means enterprises as defined in Title I of the Annex to Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (OJ L 124, 20.5.2003, p. 36); the category of micro, small and medium-sized enterprises is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million.

- **SME:** An SME is a micro-, small- or medium-sized enterprise. The classification of an enterprise as an SME depends on the number of its employees and either its turnover or balance sheet total. The parameters given in Table 1 apply directly for 'autonomous enterprises' as defined in the Commission Recommendation 2003/361/EC of 6 May 2003. This Commission Recommendation also defines 'partner enterprises' and 'linked enterprises', as well as the method for establishing the data (employees, turnover, balance sheet) for these types of enterprises. This is particularly relevant for multinational companies with sites in different Member States (see also section 3.2.4).¹²

¹² Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (notified under document number C(2003) 1422), OJ L 124, 20.5.2003 (2003/361/EC).

Table 1: Delimitation criteria for SME.

| Category | Employees | AND | Turnover | OR | Balance sheet total |
|----------|-----------|-----|-----------|----|---------------------|
| SME | < 250 | | ≤ EUR 50m | | ≤ EUR 43m |

Large enterprises are not explicitly defined in the Directive, other than being those enterprises **that are not SMEs**. Based on this implicit definition, the following explicit definition of large enterprises follows:

- **Large enterprises:** In line with the definition in Article 8 of the EED, any company that is not an SME is considered as a large enterprise/company and is thus subject to the requirements of Article 8(4-7). Though it is not explicitly stated in the EED, a non-SME/large enterprise can be defined as one which has at least 250 employees or where fewer than 250 employees, a turnover in excess of EUR 50m and a balance sheet total greater than EUR 43m. Note that companies not meeting these criteria individually may also be subject to the mandatory requirements if they are considered as belonging to a group of companies and are classified as a large enterprise due to link or partner enterprise status. The following boxes provide the definition of linked and partner enterprises, as well as the rules to establish the data for an enterprise, as provided in Annex Title I - Article 3 and 6 of the Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (2003/361/EC).¹³

Annex Title I – Article 3 of Recommendation 2003/361/EC: Types of enterprise taken into consideration in calculating staff numbers and financial amounts

1. An 'autonomous enterprise' is any enterprise which is not classified as a partner enterprise within the meaning of paragraph 2 or as a linked enterprise within the meaning of paragraph 3.
2. 'Partner enterprises' are all enterprises which are not classified as linked enterprises within the meaning of paragraph 3 and between which there is the following relationship: an enterprise (upstream enterprise) holds, either solely or jointly with one or more linked enterprises within the meaning of paragraph 3, 25 % or more of the capital or voting rights of another enterprise (downstream enterprise).

However, an enterprise may be ranked as autonomous, and thus as not having any partner enterprises, even if this 25 % threshold is reached or exceeded by the following investors, provided that those investors are not linked, within the meaning of paragraph 3, either individually or jointly to the enterprise in question:

- (a) public investment corporations, venture capital companies, individuals or groups of individuals with a regular venture capital investment activity who invest equity capital in unquoted businesses ('business angels'), provided the total investment of those business angels in the same enterprise is less than EUR 1 250 000;
- (b) universities or non-profit research centres;

¹³ Note that the Guidance note on Article 8 of the EED (SWD(2013) 447 final) is not exhaustive in terms of defining linked and partner companies (No. 24) as compared to the relevant Commission Recommendation 2003/361/EC.

- (c) institutional investors, including regional development funds;
 - (d) autonomous local authorities with an annual budget of less than EUR 10 million and fewer than 5 000 inhabitants.
3. 'Linked enterprises' are enterprises which have any of the following relationships with each other:
- (a) an enterprise has a majority of the shareholders' or members' voting rights in another enterprise;
 - (b) an enterprise has the right to appoint or remove a majority of the members of the administrative, management or supervisory body of another enterprise;
 - (c) an enterprise has the right to exercise a dominant influence over another enterprise pursuant to a contract entered into with that enterprise or to a provision in its memorandum or articles of association;
 - (d) an enterprise, which is a shareholder in or member of another enterprise, controls alone, pursuant to an agreement with other shareholders in or members of that enterprise, a majority of shareholders' or members' voting rights in that enterprise.

There is a presumption that no dominant influence exists if the investors listed in the second subparagraph of paragraph 2 are not involving themselves directly or indirectly in the management of the enterprise in question, without prejudice to their rights as stakeholders.

Enterprises having any of the relationships described in the first subparagraph through one or more other enterprises, or any one of the investors mentioned in paragraph 2, are also considered to be linked.

Enterprises which have one or other of such relationships through a natural person or group of natural persons acting jointly are also considered linked enterprises if they engage in their activity or in part of their activity in the same relevant market or in adjacent markets.

An 'adjacent market' is considered to be the market for a product or service situated directly upstream or downstream of the relevant market.

4. Except in the cases set out in paragraph 2, second subparagraph, an enterprise cannot be considered an SME if 25 % or more of the capital or voting rights are directly or indirectly controlled, jointly or individually, by one or more public bodies.
5. Enterprises may make a declaration of status as an autonomous enterprise, partner enterprise or linked enterprise, including the data regarding the ceilings set out in Article 2. The declaration may be made even if the capital is spread in such a way that it is not possible to determine exactly by whom it is held, in which case the enterprise may declare in good faith that it can legitimately presume that it is not owned as to 25 % or more by one enterprise or jointly by enterprises linked to one another. Such declarations are made without prejudice to the checks and investigations provided for by national or Community rules.

Annex Title I – Article 6 of Recommendation 2003/361/EC: Establishing the data of an enterprise

1. In the case of an autonomous enterprise, the data, including the number of staff, are determined exclusively on the basis of the accounts of that enterprise.
2. The data, including the headcount, of an enterprise having partner enterprises or linked enterprises are determined on the basis of the accounts and other data of the enterprise or, where they exist, the consolidated accounts of the enterprise, or the consolidated accounts in which the enterprise is included through consolidation.

To the data referred to in the first subparagraph are added the data of any partner enterprise of the enterprise in question situated immediately upstream or downstream from it. Aggregation is proportional to the percentage interest in the capital or voting rights (whichever is greater). In the case of cross-holdings, the greater percentage applies.

To the data referred to in the first and second subparagraph is added 100 % of the data of any enterprise, which is linked directly or indirectly to the enterprise in question, where the data were not already included through consolidation in the accounts.

3. For the application of paragraph 2, the data of the partner enterprises of the enterprise in question are derived from their accounts and their other data, consolidated if they exist. To these is added 100 % of the data of enterprises which are linked to these partner enterprises, unless their accounts data are already included through consolidation.

For the application of the same paragraph 2, the data of the enterprises which are linked to the enterprise in question are to be derived from their accounts and their other data, consolidated if they exist. To these is added, pro rata, the data of any possible partner enterprise of that linked enterprise, situated immediately upstream or downstream from it, unless it has already been included in the consolidated accounts with a percentage at least proportional to the percentage identified under the second subparagraph of paragraph 2.

4. Where in the consolidated accounts no staff data appear for a given enterprise, staff figures are calculated by aggregating proportionally the data from its partner enterprises and by adding the data from the enterprises to which the enterprise in question is linked.

For the purpose of further illustrating the definitions and national implementations, the delimitation of companies is further explained in the information box on the next page.

Illustration of SME and large enterprise definition

The delimitation of SMEs and large companies is based on three criteria: number of employees, turnover and balance sheet total. These criteria apply directly to the accounts of 'autonomous enterprises', whereas for 'linked' or 'partner' enterprises they apply to consolidated accounts as specified in the Commission Recommendation 2003/361/EC of 6 May 2003 (Annex Title I - Article 3 and 6, reproduced in the boxes above). For each of these criteria, there is a threshold value. The employee criterion is considered as the primary criterion and exceeding it means that a company is definitively a non-SME, i.e. a large company. The two financial criteria are considered as secondary criteria. To meet the definition of an SME, at least one of these criteria must also not exceed the threshold value.

A company can meet or not meet the threshold value for each criterion. Combining these two cases for each of the three criteria provides a total of **eight** different cases which are summarised in Table 2 and visualized in Figure 3.

Table 2: Combining threshold values to delimit SMEs and non-SME.

| Employees | Turnover | Balance Sheet Total | Outcome | Reason |
|-----------|----------|---------------------|---------|---------------------------------------|
| < 250 | ≤ €50m | ≤ €43m | SME | Meets all criteria |
| < 250 | ≤ €50m | > €43m | SME | Meets main and one secondary criteria |
| < 250 | > €50m | ≤ €43m | SME | Meets main and one secondary criteria |
| < 250 | > €50m | > €43m | Large | Only meets primary criterion |
| ≥ 250 | ≤ €50m | ≤ €43m | Large | Does not meet primary criterion |
| ≥ 250 | ≤ €50m | > €43m | Large | Does not meet primary criterion |
| ≥ 250 | > €50m | ≤ €43m | Large | Does not meet primary criterion |
| ≥ 250 | > €50m | > €43m | Large | Does not meet any criterion |

There are **three** cases where companies can be classified as **SMEs** (foreground: both cubes on the left; background: lower cube on the left). Companies belonging to the remaining **five** cases can be considered as **non-SME/large enterprises**.

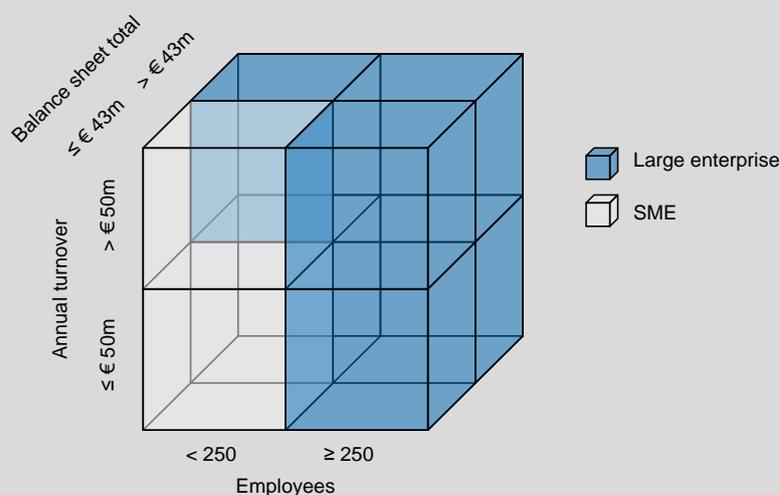


Figure 3: Illustration of the definition of companies according to the EED.

1.4.2. Focus areas

The study covers three focus areas: energy audits, energy management (systems) and exchange mechanisms. These are defined as follows:

- **Energy audit:** An energy audit is “a systematic procedure with the purpose of obtaining adequate knowledge of the existing energy consumption profile of a building or group of buildings, an industrial or commercial operation or installation or a private or public service, identifying and quantifying cost-effective energy savings opportunities, and reporting the findings.”¹⁴
- **Energy management system:** An energy management system is a “set of inter-related or interacting elements of a plan which sets an energy efficiency objective and a strategy to achieve that objective.”¹⁴
- **Exchange mechanism:** An exchange mechanism is an activity aimed at providing companies with technical assistance and targeted information to encourage them to adopt energy efficiency measures. To be considered as an exchange mechanism, an instrument must be based at least on a bilateral exchange, e.g. between public bodies and companies or an exchange of information between companies. The provision of information material and guidance documents on their own is not considered as an exchange mechanism in this study.

1.4.3. Instruments

The term instrument as used in this study is used to describe any concerted concept or action by policy makers and/or institutional stakeholders to improve the energy-efficiency of companies. Member States can implement a multitude of instruments to achieve their policy goals. This also includes the implementation of Article 8 of the EED. In order to analyse the current state of implementation of Article 8 for SMEs in the Member States in more detail, a structured review of existing instruments has been completed. For structuring the analysis, the following classification of instruments is applied:

- **Regulatory instruments** are organisational and technological requirements and standards with the aim of improving energy efficiency in entities. Regulation is based on prescribed or prohibited activities while standards define a harmonised way of performing these activities. An example of a regulatory instrument is the requirement for large enterprises to conduct energy audits.
- **Voluntary agreements** are agreements between public authorities and private entities with the aim of achieving energy-related objectives or improving energy efficiency beyond compliance with regulation. These agreements are often not entirely voluntary as non-compliance will result in penalties or the loss of rewards. An example of a voluntary agreement is the Dutch Long Term Agreement where companies are obliged to develop energy-efficiency plans, to implement these plans and to report on the results. In return for signing an agreement, a company is more likely to be granted the environmental permit that it needs to operate.
- **Financial instruments** such as subsidies, incentives, taxes and charges are instruments that impose a fee on each unit of undesirable activity, i.e. on energy

¹⁴ Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2012/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, OJ L 315, 14.11.2012, Art.2.

demand and/or related emissions, or that are based on direct payments, tax reductions, price supports or equivalent mechanisms provided by public bodies to entities with the aim of implementation action that leads to an improvement in energy efficiency. An example of this instrument is the German SME Energy Consulting Programme which is a funding scheme for energy audits.

- **Information instruments** are intended to provide information on the energy demand of entities and on opportunities to improve their energy efficiency. Examples of this type of instrument are the energy efficiency networks applied in Germany and in Sweden where companies exchange their experiences regarding energy efficiency.

In some cases, instruments may encompass more than one of these categories. In these cases, the instruments have been assigned to the categories according to their main focus. Note that only policy instruments are covered - research and development activities carried out on European projects that involve, for example, direct international or national funding and investment aimed at innovative approaches are not included. These projects are usually restricted to pilot applications and selected participating companies. An overview of such activities is provided in the appendix of this report. Note further that in this report only instruments that explicitly address the three focus areas described above are considered. Thus, general SME development programmes are not listed as instruments unless they have a substantial direct link to the focus areas of this study.

1.4.4. Other terms

- **Good practice:** A good practice is an activity that achieves given aims in a very efficient and effective manner and thereby tends to out-perform other activities pursuing the same aim.
- **Resources:** A resource refers to a technical tool, e.g. software or guidelines that can be applied by companies, policy makers or auditors/consultants to address energy-efficiency improvements in companies. Within this study, only resources that relate to energy audits, energy management and exchange mechanisms are addressed.

1.5. Outline of the study

In Section 2 of this report, instruments related to Article 8 of the EED are described in line with the classification scheme defined above. The instruments cover the activities that have been implemented by the Member State to enhance the implementation of energy audits, energy management and exchange mechanisms. This is accompanied by an analysis of activities in countries beyond the EU such as Canada, China, Japan, Norway, Switzerland and the United States.

Based on the review of national activities in the EU-28, Section 3 provides an overarching analysis of implementation across Member States. The aim of this analysis is to identify commonalities and differences between Member States MS and to describe challenges related to different aspects of the implementation.

Section 4 provides details on good-practice approaches and recommendations for responding to the challenges identified. Finally, overarching conclusions with regard to the key questions are provided in Section 5. In addition to this analysis, the appendix provides an overview of existing resources and research projects that might serve as a

basis for policy makers, companies, energy audits/consultants and other stakeholders to enhance activities related to the three focus areas of this study.

2. Implementation by country

This section provides an overview of activities undertaken by Member States to enhance the implementation of energy audits, energy management and exchange mechanisms. The analysis has been carried out as a country-by-country review of the activities for each Member State in the EU 28. In addition, supplementary information is provided for selected other European countries and for other large countries worldwide.

The analysis of the different Member States provides a structured overview of the state of implementation of Article 8 in terms of instruments that have been established and implemented. For this purpose, the country analysis is based on a common scheme of analysis that covers the following aspects:

- A description of the current state of implementation of Article 8 of the EED in the Member State as at 31st August 2015.
- An overview table of different instruments that are currently in place in that country.
- A description of the obligation for large companies resulting from Article 8 that provides details about specific aspects related to the national implementation.
- A description of other instruments that are in place to enhance the implementation of energy audits, to promote energy management systems and to bring forward exchange mechanisms.
- An outlook on further implementation of Article 8 in the Member State.
- A set of tables that address the key questions outlined in the introductory section.

The analysis of countries outside of the EU is intended as a complementary collection of approaches used in other parts of the world.

The requirements for large enterprises are based on mandatory energy audits. A common list of items highlighting key aspects of national implementation is used to further characterise the corresponding activities in each Member State in this chapter; these items address the following questions:

- General definition: How are SMEs and large companies defined in the Member State?¹⁵
- Scope: Are there any regulations for specific groups, e.g. public companies?
- Exemptions: What types of exemptions from the mandatory audits are in?
- Deadline: What implementation or reporting deadlines has the Member State established?

¹⁵ The focus of this study, as regards this definition, is on the number of employees, turnover and balance sheet totals and how these values are linked. Where available, further details have been provided on how linked and partner companies are defined (see also the sections on multi-national/multi-site companies); it should be noted that this information is not exhaustive due to the overview character of this study.

- Multi-national companies: How is the requirement for mandatory audits applied to multi-national companies?
- Multi-site companies: How is the requirement for mandatory audits applied to multi-site companies?
- Minimum coverage: How much energy needs to be covered by the mandatory audits?
- Penalties for non-compliance: What types of penalties for non-compliance are in place?
- Specific provisions for buildings: How are buildings dealt with in respect of the mandatory audits?
- Specific provision for transport: How is transportation dealt with in respect of the mandatory audits?
- Monitoring: How has the institutional monitoring process been designed in the Member State?

The range of activities for encouraging SMEs to carry out audits and to implement their recommendations is far more diverse. To appropriately capture the different activities of the Member States regarding SMEs (and large companies in some cases), the national instruments are characterised individually by a descriptive summary.

It should be noted that throughout the duration of this study from March to September 2015, several Member States were still in the process of transposing the requirements of Article 8 into their national primary and/or secondary legislation. This has two implications for the findings of this study: due to the lack of legal documents and/or availability of information on the transposition provided by some Member States, the level of detail in the country analysis varies. Furthermore, while trying to keep the information up to date, interpretations and guidelines may have been modified after concluding the analysis for specific countries.

2.1. Member States of the European Union (EU-28)

2.1.1. Austria

The institution responsible for the implementation of the EED in Austria is the Ministry for Science, Research and Industry. The Austrian Energy Agency has been appointed as national monitoring body. The most recent official communication on the state of implementation of Article 8 in Austria is the Austrian NEEAP from 2014.¹⁶

Besides mandatory energy audits for large companies, Austria has various programmes for improving energy efficiency in industry both at the state and at the federal level. Amongst others, the programme “Klima:aktiv”, which is the climate protection initiative of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management, actively seeks to promote the implementation of energy audits and energy management systems in companies. Additionally, several regional programmes are providing funding for energy audits in companies. Table 3 provides an overview of the instruments directly related to energy audits, energy management

¹⁶ Ministry for Science, Research and Industry (2014): NEEAP 2014. Erster Nationaler Energieeffizienzaktionsplan der Republik Österreich 2014 gemäß Energieeffizienzrichtlinie 2012/27/EU. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_de_austria.pdf. Accessed: 03.08.2015.

systems and exchange mechanisms currently implemented in Austria. These instruments are further detailed below.

Table 3: Overview of instruments in Austria.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Regional programmes | • | • | • | • | | | | • | |

2.1.1.1. Energy audits

Mandatory energy audit (Energieeffizienzgesetz (EEffG), English: Energy Efficiency Act): The relevant law which transposes Article 8 of the EED in Austria is the Energy Efficiency Act. This was adopted by the Austrian government on 9 July 2014 and published on 11 August 2014. According to the law, all large companies located in Austria have to conduct an energy audit by 30 November 2015. To support companies covered by the regulation when interpreting the law, the Ministry for Science, Research and Industry published an FAQ document at the end of January 2015.¹⁷ The following description of the legal framework regarding mandatory energy audits in large companies is mainly based on this document.

- **General definition:** Large companies (defined as any privately organised and stable long-term organisation of independent economic activity) have to conduct an energy audit every four years in the time period from 2015 to 2020 according to §9 EEffG. According to §5 of the same law, large companies are companies that are not an SME. This directly refers to the SME definition from the EC.¹⁸ The obligation to conduct an energy audit in Austria captures organisations which are operated under private law (e.g. limited companies, associations, private foundations, etc.), but not facilities subject to the public right (e.g. local authorities, institutions under public law, funds or foundations under public law). No. 87 of the Austrian interpretation guideline “FAQ Energieeffizienzgesetz” details that enterprises, which are more than 50% owned by another company, are attributable to the parent company.¹⁷
- **Scope:** There are no exemptions for large companies from the obligation to conduct an energy audit in Austria, except - as stated above - for facilities subject to public right (e.g. local authorities, institutions under public law, funds or founda-

¹⁷ Ministry for Science, Research and Industry (2015): Interpretation guideline - Energieeffizienzgesetz FAQ. Online: <http://www.bmfwf.gv.at/EnergieUndBergbau/Energieeffizienz/Documents/FAQ%202015-01-20%20endg%C3%BCltige%20Fassung%20-%20clean.pdf>. Accessed: 03.08.2015. Other institutions also published guideline documents to support companies with the interpretation of the Energy Efficiency Law, e. g. Wirtschaftskammer Österreich (2015): Leitfaden Bundesenergieeffizienzgesetz. Online: https://www.wko.at/Content.Node/branchen/oe/Holzindustrie/News---Presse/Pressemeldungen/109_Leitfaden_fuer_Unternehmen.pdf. Accessed: 06.09.2015.

¹⁸ Commission Recommendation of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises (notified under document number C(2003) 1422), OJ L 124, 20.5.2003 (2003/361/EC).

tions under public law). The Ministry for Science, Research and Industry states that approximately 1,100 large companies have to comply with the obligation to conduct an energy audit. Of this number, the Ministry estimates that about 100 companies will implement an energy management system.¹⁷

- **Exemptions:** Instead of carrying out an energy audit enterprises are also allowed to implement an environmental or energy management system (ISO 14001 or ISO 50001) to comply with the obligation resulting from the Energy Efficiency Act. Alternatively an equivalent, nationally approved management system¹⁹ which contains an energy audit is also allowable (§ 9 Art. 2b EEffG).
- **Deadlines:** A large company has to inform the Monitoring Agency (Monitoring-stelle Energieeffizienz) within one month after the entry into force of the obligation (which was in January 2015) whether it intends to implement an energy audit or an alternative system. If a company is considered as a large company at the time of the entry into force of the obligation, this company has to conclude the energy audit by 30 November 2015. This deadline must also be met if a company plans to implement an alternative system (see also "alternative systems" below).²⁰
- **Multi-national and multi-site companies:** The parent company has to fulfil the obligation to conduct an energy audit in accordance with §9 EEffG. However, the scope of the Austrian obligation to conduct an energy audit is limited to the parts of the company operating in Austria. Thus, the calculation of the thresholds for the definition as well as the obligation to conduct an energy audit are both related to the company parts operating in Austria, regardless of where the parent company has its headquarters. Consequently, it may be the case that a company headquartered abroad is responsible for fulfilling the obligation to conduct an energy audit for its subsidiary companies in Austria.¹⁷
- **Minimum coverage:** In accordance with Annex IIIb Energy Efficiency Act, an energy audit must include all essential areas of the energy consumption and at the same time must be proportionate and representative. Furthermore, an energy audit has to consider the three major energy consumption areas (buildings, processes and transportation) where these account for at least 10% of the total energy consumption of the entire company (Annex III, b Energy Efficiency Act). If the threshold of 10% is exceeded, energy audits for all sites of the company have to consider the respective area, even if the examined energy consumption area in the subsidiary is not essential.
- **Penalties for non-compliance:** Calculation of penalties (which can be up to EUR 10,000 (§31 EEffG)) will be defined on a case-by-case basis. The absolute value will depend on the degree of non-compliance and the income and assets of the company.¹⁷
- **Specific provisions for buildings:** As stated above, the energy audit must cover buildings if the total energy consumption in this area exceeds 10% of the total energy consumption of the company. The responsibility to conduct an energy audit depends on who operationally uses the building (or even a single space within a building complex) and who in this context consumes the energy. Usually this will

¹⁹ An equivalent, intra-nationally approved management system has to be based on the criteria set in the UMG-register (VO, BGBl. II Nr. 152/2012). For an Austrian version see: http://www.ris.bka.gv.at/Dokumente/BgblAuth/BGBLA_2012_II_152/BGBLA_2012_II_152.pdf. Accessed: 03.08.2015.

²⁰ Austrian Energy Agency (2015): Unternehmen. Online: <http://www.monitoringstelle.at/index.php?id=585>. Accessed: 03.08.2015.

be the user and/or tenant. In the event that the owner of the building does not grant access to the relevant building areas (e.g. central heating system), this may be left out of the energy audit.¹⁷

- **Monitoring:** The documentation for the monitoring process must comply with the formal requirements of §27 Article 3 of the Energy Efficiency Act and has to be completed continuously. The energy efficiency measures identified within the energy audit and also the energy efficiency measures that have already been implemented by the company have to be recorded. This information has to be submitted either by an auditor or by the company itself no later than 14 February of the following year and will be collected in a database set up by the Monitoring Agency (Monitoringstelle Energieeffizienz).^{21,22}

Regional programmes: Under the umbrella of “klima:aktiv” which is the climate protection initiative of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management²³ there are several regional programmes (e.g. in Lower Austria, Upper Austria, Salzburg, Styria, Tyrol, Vorarlberg, Vienna). These programmes aim at fostering the implementation of energy audits and energy management systems in companies. Depending on the regional programme, there are different types of funding available, including for energy audits and the implementation of energy efficiency measures. The Austrian Energy Agency has published a detailed guideline document which presents the different regional programmes and its framework conditions for applicants.²⁴

2.1.1.2. Energy management systems

No dedicated instruments specifically dealing with the implementation of energy management systems could be identified for Austria. However, there is an e-learning module on the implementation of energy management systems according to ISO 50001 in Austria, which is based on the BESS project (see section on tools).²⁵

2.1.1.3. Exchange mechanisms

No exchange mechanisms could be identified.

2.1.1.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Austria is provided in Table 4.

²¹ Austrian Energy Agency (2015): Unternehmen. Online:

<http://www.monitoringstelle.at/index.php?id=679>. Accessed: 03.08.2015.

²² Wirtschaftskammer Österreich (2015): Leitfaden Bundesenergieeffizienzgesetz. Online: https://www.wko.at/Content.Node/branchen/oe/Holzindustrie/News---Presse/Pressemeldungen/109_Leitfaden_fuer_Unternehmen.pdf. Accessed: 06.09.2015.

²³ Lackner, P. (2014): klima:aktiv The climate protection initiative of the Austrian Ministry of Environment. Presentation held at Energy Audits and Energy Management Systems under Energy Efficiency Directive Article 8 Workshop. Online: http://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/files/documents/events/at_-_voluntary_ee_program_for_enterprises_-_austria.pdf. Accessed: 03.08.2015.

²⁴ Austrian Energy Agency (2009): Schritte zur Verbesserung der Energieeffizienz in Betrieben - ein Leitfaden. Online: http://www.klimaaktiv.at/energiesparen/betriebe_prozesse/beratung_foerderung/beratungsleist_bdd.ht ml. Accessed: 03.08.2015.

²⁵ Austrian Energy Agency (2015): Energetische Bewertung. Online: <http://www.energymanagement.at/index.php?id=98>. Accessed: 22.07.2015.

Table 4: Summary for the implementation of Article 8 in Austria.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> • §9 Energy Efficiency Act transposes Art. 8 in national law • FAQ document as interpretation guideline for companies |
| | How are large enterprises defined? | <ul style="list-style-type: none"> • According to definition from EC |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> • Scope limited to operating company parts in Austria • Parent company (even if abroad) responsible for energy audit |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> • Several programmes at regional level available |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> • Facilities subject to public right exempted (e.g. local authorities, institutions, funds or foundations under public law) |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> • No information available |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> • Monitoring Agency (Monitoringstelle Energieeffizienz) responsible for monitoring process • Database concerning results from energy audits planned (reports to be presented by companies no later than 14 February of the following year) |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> • Up to EUR 10,000 depending on a case-by-case decision |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> • "klima:aktiv" (climate protection initiative of the Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management) is the biggest information and funding programme for companies |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> • No programme currently available which specifically targets SMEs • However, various regional programmes for companies available which could also be requested by SMEs |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> • No schemes regarding energy management systems have been identified which specifically target SMEs |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> • Economic Chambers of Commerce and several Industrial Associations seek to inform their members about possibilities to implement an energy audit or energy management system |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> • Several discussion platforms and also informative events for companies from Economic Chambers of Commerce and also several Industrial Associations |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> • Economic Chambers of Commerce and also several Industrial Associations |

2.1.2. Belgium: Brussels region

Energy is a regional responsibility within Belgium and as such the Flanders, Wallonia and Brussels regions each have, or will have, their own policy and instruments related to the transposition of Article 8 of the EED. Each of the regions has its own NEEAP, and therefore the status of legislation in each region is varied, as are the details of each of the instruments. This means that companies based within Belgium will be subject to different requirements for energy audits and energy management, depending on which region they are based in, despite being located within the same country. This section specifically discusses the position in the Brussels region.

For the Brussels region, Brussels Environment is responsible for monitoring all activities related to mandatory energy audits. Article 8 of the EED has been considered to be transposed by existing legislation. This is the Decree of the Government of Brussels-Capital Region of 15 December 2011 “relating to energy audits for large consumers of energy facilities”²⁶, which mandates energy audits for all operators requiring environmental permits. These permits are required where the operator has a building with a floor area of more than 3,500 m². More recent information indicates that Article 8 shall be addressed by the Brussels Code of Air, Climate and Energy Management in 2016.²⁷ Table 5 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in the Brussels region. These instruments are further detailed below.

Table 5: Overview of instruments in Belgium: Brussels region.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (●) | | (●) | | | (●) | | | |
| (●): National legislation not in force yet | | | | | | | | | |

2.1.2.1. Energy audits

Mandatory energy audit: Article 8 of the EED was considered to be transposed by existing legislation. The Decree of the Government of Brussels-Capital Region of 15 December 2011 “relating to energy audits for large consumers of energy facilities”²⁶ states that energy audits must be carried out by operators who require environmental permits. This energy audit obligation must be undertaken for any building bigger than 3,500m² and must be completed prior to application for a new permit or the renewal of an existing one. In addition to this Decree, the Decree of Brussels-Capital Region of 2 May 2013 concerning the Brussels Code of Air, Climate and Energy Management provides that the Regional Government can require owners of buildings whose total

²⁶ Decree of the Government of Brussels-Capital Region (2011): Relating to energy audits for large consumers of energy facilities. Online: https://eguides.cmslegal.com/energy_efficiency_directive/19.0/belgium.html. Accessed: 21.10.2015.

²⁷ CMS (2016): CMS e-guides. Belgium. Online: https://eguides.cmslegal.com/energy_efficiency_directive/19.0/belgium.html. Accessed: 01.03.2016.

floor area in the region is greater than 100,000 m² to develop an energy management plan, which may include an audit.²⁸

- **General definition:** Mandatory energy audit requirements are defined by the floor area of enterprises. Any enterprise that occupies more than 3,500m² of floor space in the region must undertake an energy audit, irrespective of the company size.²⁶ This is not in line with the definition of a large enterprise that is used by the European Commission to mandate which organisations must undertake energy audits. Due to the basis of the criteria being building floor area, both large enterprises and SMEs may be required to undertake audits.
- **Scope:** Several exclusions have been identified. These provide exclusions from the requirement for environmental permits, and therefore from mandatory energy audit.²⁶ Exclusion criteria include (a) enterprises that have an EPB (energy performance of buildings) proposal for new buildings or major renovations according to the Decree of 7 May 2007 on the energy performance and indoor climate of buildings,²⁹ (b) enterprises participating in the EU ETS and (c) buildings with very low energy consumption per m² of floor area (below the limits specified in the Decree of 15 December 2011 annex of standard climate and of normal occupation). In the Brussels region, 1,613 enterprises are affected by the energy audit requirements.³⁰ The size of the target group within the Brussels region is not known.
- **Exemptions:** No alternative systems for compliance are in place in Brussels.
- **Deadlines:** The Decree of 15 December 2011 became effective on 30 July 2012. Since this date, all operators with applications for new permits, or re-applications have had to comply with the requirement to undertake an energy audit. There is no deadline by which all operators have to comply. The audit must be undertaken within the 12 months preceding the application.²⁶
- **Multi-national companies:** No specific provisions are made for multi-national companies.
- **Multi-site companies:** It is not clear if all buildings or a representative sample must be audited where participation is enforced by multiple building floor area.
- **Minimum coverage:** No information currently available.
- **Penalties for non-compliance:** Failure to complete an appropriate energy audit will result in refusal of environmental permits to operate.²⁶
- **Specific provisions for buildings:** Regulations apply to enterprises that occupy individual buildings and multiple buildings in the region. The floor area defines participation and so international companies occupying buildings that meet the thresholds must comply.

²⁸ Decree of the Government of Brussels-Capital Region (2013): Brussels Code of Air, Climate and Energy Management. Online: https://eguides.cmslegal.com/energy_efficiency_directive/19.0/belgium.html. Accessed: 21.10.2015.

²⁹ Decree of the Government of Brussels-Capital Region (2007): Energy Performance and Indoor Climate of Buildings. Online: https://eguides.cmslegal.com/energy_efficiency_directive/19.0/belgium.html. Accessed: 21.10.2015.

³⁰ Belgian Energy Efficiency Action Plan (2014): Online: <https://ec.europa.eu/energy/sites/ener/files/documents/Belgium%20NEEAP.pdf>. Accessed: 21.10.2015.

Table 6: Summary for the implementation of Article 8 in Belgium: Brussels region.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Not yet transposed; current Decree relating to energy audits for large consumers of energy facilities (2011) |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Defined by building size (>3,500m²) |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Regional legislation focuses on the operations at a site level |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Mandatory energy audits are required as part of the environmental permitting process, which applies to operators with a building of more than 3,500m² floor area |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> EPB proposals Participants in EU ETS Low energy consumption per m² floor area |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No information available |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Existing environmental permitting processes being used but modified to ensure energy audits are accounted for Monitoring undertaken by Brussels Environment |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Refusal of environmental permit |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Requirement to undertake audit is based on requirement for environmental permit. This applies to operators with buildings of more than 3,500m² and therefore can apply to SMEs |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> None |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> None |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> No information available |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No information available |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No information available |

- **Specific provisions for transport:** No specific provisions are made for transport. Audit requirements are in place for buildings only.
- **Monitoring:** Brussels Environment will monitor compliance with the regulations. As the requirement to undertake an energy audit forms part of the process of ap-

plying for environmental permits it will be closely monitored as part of the review of applications. In addition to identifying the energy saving opportunities, those that have an economic benefit (defined as five year return on investment or better) must be implemented within four years. This will be monitored through permit renewals.²⁶

2.1.2.2. Energy management systems

No information is available concerning the implementation of energy management systems in the Brussels region.

2.1.2.3. Exchange mechanisms

No information is available concerning exchange mechanisms for energy audits and energy management systems in the Brussels region.

2.1.2.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Belgium (Brussels region) is provided in Table 6.

2.1.3. Belgium: Flanders region

Energy is a regional responsibility within Belgium and as such the Flanders, Wallonia and Brussels regions each have, or will have, their own policy and instruments related to the transposition of Article 8 of the EED. Each of the regions has its own NEEAP, and therefore the status of legislation in each region is varied, as are the details of each of the instruments. This means that companies based within Belgium will be subject to different requirements for energy audits and energy management, depending on which region they are based in, despite being located within the same country. This section specifically discusses the position in the Flanders region.

In the Flanders region, the Flemish Energy Agency is responsible for monitoring the implementation of Article 8. Article 8 has been transposed via VLAREM-trein 2013,³¹ which entered into force on 24 September 2014. VLAREM-trein 2013 introduced amendments to the existing environmental licensing regulations, to allow for the provision of Article 8 requirements.

Since mid-2005 the Flemish government has had an audit covenant in place for energy efficiency in industry. This is a voluntary scheme which aims to promote energy efficiency through undertaking energy audits. Members of the scheme also commit to implementing the findings of the audits, and benefit from reduced taxes and energy levy.³²

Table 7 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in the Flanders region. These instruments are further detailed below.

³¹ Flemish government (2014): 'Decision by the Government to amend various acts regarding the environment, which is an adaptation to the evolution of technology and the CLP Regulation'. Online: https://eguides.cmslegal.com/energy_efficiency_directive/19.0/belgium.html. Accessed: 21.10.2015

³² Flemish Energy Agency (2005): Audit covenant. Online: <http://www.energiesparen.be/energiebeleid/voor-bedrijven/auditconvenant>. Accessed: 22.10.2015.

Table 7: Overview of instruments in Belgium: Flanders region.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Audit covenant | • | | • | | | | • | | |
| Self-scan for SME | | • | • | | | | | | • |
| SME portfolio | | • | | • | | | | | • |

2.1.3.1. Energy audits

Mandatory energy audit: The Flemish Government amended the environmental licensing regulations (via VLAREM-trein 2013) to provide for the transposition of Article 8. In addition, the energy policy agreement (EBO = EnergieBeleidsOvereenkomst) is in place, requiring participating companies to carry out energy audits.

- **General definition:** The definition of a large enterprise used within the existing Flemish legislation is an organisation with 250 or more employees AND an annual turnover exceeding EUR 50m or an annual balance sheet exceeding EUR 43m. This has been identified as an error that will be corrected in Vlarem-trein 2015. The revised definition will revert to a definition in line with 2003/361/EC, meaning that large enterprises will be defined as employing 250 or more people OR having an annual turnover exceeding EUR 50m and an annual balance sheet exceeding EUR 43m. In practice the revised definition is already being applied and used.³³
- **Scope:** Exemptions that apply in Flanders for several situations are³¹: (a) energy intensive enterprises that have voluntary energy agreements with the Government for the improvement of energy efficiency (EnergieBeleidsOvereenkomst); (b) sites that are required by law to have an energy plan (this is a requirement for companies consuming more than 0.5 PJ energy per year); and (c) public buildings with an EPC are also being considered for exemption.³³ In Flanders, 2,636 enterprises are affected by the energy audit requirements.³⁴
- **Exemptions:** Enterprises implementing an energy management system certified to ISO 50001 will be considered compliant with Article 8.³³
- **Deadlines:** The deadline for completion of mandatory energy audits is 1 December 2015.³¹
- **Multi-national companies:** No specific provisions have been made for multi-national companies.

³³ Personal communication with Joris Recko (VLAAMS) of 22.09.2015.

³⁴ Belgian Energy Efficiency Action Plan (2014): Online: <https://ec.europa.eu/energy/sites/ener/files/documents/Belgium%20NEEAP.pdf>. Accessed: 21.10.2015.

- **Multi-site companies:** There is an obligation for participating enterprises to audit each of their sites.³³
- **Minimum coverage:** No minimum coverage thresholds are in place in the Flanders region.
- **Penalties for non-compliance:** There are no specific penalties in place for non-compliance. The Flemish Energy Agency will attempt to resolve issues with audits on a case by case basis as they arise. In the worst case scenario, it is possible that the enterprise may lose its environmental permit if it has one.³³
- **Monitoring:** The Flemish Energy Agency will be monitoring compliance. Enterprises undertaking audits are required to submit reports to the Flemish Energy Agency in a prescribed format via a dedicated web-portal.³⁵ Companies that apply for an exemption because they have implemented an energy management system are also obliged to report the results from the energy audit.³¹ A guidance document is available to support companies with report submission via the web-portal. This provides step-by-step guidance on the process.³⁶ The Flemish Energy Agency will be responsible for monitoring the content of audit reports.

Self-scan for SMEs: A government scheme is in place which provides free 'energy scans' for SMEs (Self-scan for SMEs).³⁷ These are carried out by the SME, and access to follow-on support is provided through five engineering companies. The energy scans are funded through the Enterprise Agency.³³

SME portfolio for environmental and energy advice:³⁸ This instrument allows businesses to purchase a service package that helps to improve performance. One element of this service package is training and advice on energy and environmental matters. Financial support is available for this, and can be obtained through authorised service providers. It includes 50% support for training, guidance and strategic advice and 75% support for innovation and coaching. Support is capped at a maximum per calendar year of: (a) EUR 2,500 for training; (b) EUR 2,500 for advice; (c) EUR 25,000 for strategic advice; and (d) EUR 10,000 for advice on innovation and coaching.

2.1.3.2. Energy management systems

No instruments are in place that specifically promote energy management systems.

³⁵ Flemish Energy Agency (2015): Flanders web-portal for submission of audit reports. Online: <http://energieloket.vlaanderen.be/>. Accessed: 22.10.2015.

³⁶ Flemish Energy Agency (2015): Registration procedure for the web application, energy audit large enterprises. Online: http://www2.vlaanderen.be/economie/energiesparen/beleid/20150713_Gebruikershandleiding_registratieprocedure.pdf. Accessed: 22.10.2015.

³⁷ Flemish Energy Agency (2015): Self-scan for SMEs. Online: <http://www.energiesparen.be/energiebeleid/voor-bedrijven/energiebesparing-bij-kmos/zelfscan-voor-kmos>. Accessed: 22.10.2015.

³⁸ Enterprise Flanders (2015): SME portfolio for environmental and energy advice. Online: <http://www.agentschapondernemen.be/artikel/kmo-portefeuille-voor-milieu-en-energieadvies>. Accessed: 22.10.2015.

Table 8: Summary for the implementation of Article 8 in Belgium: Flanders region.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Vlarem-trein 2013 currently in place to transpose the requirements of Article 8 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> For Vlarem-trein 2013: employing 250 or more employees or having an annual turnover exceeding EUR 50m and an annual balance sheet exceeding EUR 43m; this will be corrected to match the EC definition via Vlarem-trein 2015 |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> No specific provisions for multi-national companies Multi-site companies must audit all sites |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Vlarem-trein 2013 amends existing environmental regulations to include the provision of Article 8 requirements |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> ISO 50001 certified energy management systems EPCs for public buildings Companies that are signed up to voluntary energy agreements Companies with energy plans (required by law where >0.5 PJ energy is consumed annually) |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Unknown |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Enterprises must report that audits are completed and must submit audit reports via a dedicated web-portal Reports will be monitored by the Flemish Energy Agency |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> No defined penalties. Issues to be dealt with on a case by case basis and consequences could include loss of an environmental permit |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> A number of support schemes are in place to help SMEs with energy efficiency |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Self-scan SME which allows SMEs to undertake a self-energy audit SME portfolio, which allows businesses to purchase a service package, including energy advice |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> No specific systems for management systems |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Engagement not funded by government, but does take place to an extent through trade associations and Chambers of Commerce |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No information available |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Trade Associations, Chambers of Commerce |

2.1.3.3. Exchange mechanisms

Trade associations and the Chambers of Commerce are involved in the exchange of information on energy audits. However, engagement with SMEs is not funded by the Flemish government.³³

2.1.3.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Belgium (Flanders region) is provided in Table 8. VLAREM-trein 2015 will be issued, which will correct the qualification criteria for large enterprises.

2.1.4. Belgium: Wallonia region

Energy is a regional responsibility within Belgium and as such the Flanders, Wallonia and Brussels regions each have, or will have, their own policy and instruments related to the transposition of Article 8 of the EED. Each of the regions has its own NEEAP, and therefore the status of legislation in each region is varied, as are the details of each of the instruments. This means that companies based within Belgium will be subject to different requirements for energy audits and energy management, depending on which region they are based in, despite being located within the same country. This section specifically discusses the position in the Wallonia region.

For over 15 years Wallonia has had voluntary agreements in place with large companies, represented by their trade associations. Audits are carried out and, based on these, targets are set for the improvement of energy efficiency and reduction of CO₂ emissions.³⁹

In the Wallonia region, a draft decree transposing the requirements of Article 8 passed its first review on 17 September 2015, and is expected to take around six months to come into force.³⁹

Table 9 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in the Wallonia region. These instruments are further detailed below.

Table 9: Overview of instruments in Belgium: Wallonia region.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| AMURE and UREBA subsidies for energy audits | • | | • | | | | | • | |

³⁹ Personal communication with Carl Maschietto (DG04 Energy) of 28.09.2015.

2.1.4.1. Energy audits

Mandatory energy audit: A draft decree for the transposition of Article 8 of the EED is currently passing through the Wallonia government and is expected to come into force around March 2016.

- **General definition:** The draft decree in Wallonia will state that large enterprises are considered to be those with more than 250 employees and/or a turnover of more than EUR 50m and a balance sheet of more than EUR 43m.³⁹ This is in line with the EC definition.
- **Scope:** Large enterprises participating in voluntary agreements are exempt from undertaking energy audits under the Decree.³⁹ Around 140 large enterprises are expected to be impacted by the audit requirements in the Wallonia region.⁴⁰ It is estimated that 20-50% of organisations have already undertaken energy audits as part of voluntary agreements, however not all of these are large enterprises.³⁹
- **Exemptions:** Large enterprises that are certified to ISO 50001 do not have to undertake further energy audits, where they have completed an audit in line with the energy management system.³⁹
- **Deadlines:** No information was available relating to the deadline for undertaking energy audits in line with Article 8 of the EED.
- **Multi-national companies:** Only the operations of qualifying enterprises that fall within Wallonia are required to undertake energy audits.³⁹
- **Multi-site companies:** There are no specific provisions relating to multi-site companies.
- **Minimum coverage:** No information currently available.
- **Penalties for non-compliance:** The decree provides for an administrative fine of between EUR 250 and EUR 50,000.³⁹
- **Specific provisions for buildings:** There are no specific provisions for buildings in the Wallonia region.
- **Specific provisions for transport:** There are no specific provisions for transport in the Wallonia region.
- **Monitoring:** A centralised registry is currently under development, which will monitor the implementation of energy audits in large enterprises.⁴⁰

AMURE and UREBA subsidies for energy audits: To promote energy audits of large enterprises, Wallonia offers the AMURE⁴¹ subsidies (these are subsidies for audit and research for the benefit of private law firms). UREBA⁴² subsidies are also offered (these are subsidies for audits and studies for communities and provinces). Free audits are also available through 'service facilitators'.³⁹

⁴⁰ Belgian Energy Efficiency Action Plan (2014): Online: <https://ec.europa.eu/energy/sites/ener/files/documents/Belgium%20NEEAP.pdf>. Accessed: 21.10.2015

⁴¹ Wallonia-Brussels Federation (2015): AMURE subsidies. Online: <http://energie.wallonie.be/fr/audits-et-etudes-energetiques-amure.html?IDC=6374&IDD=12326>. Accessed: 21.10.2015.

⁴² Wallonia-Brussels Federation (2015): UREBA subsidies. Online: <http://energie.wallonie.be/fr/audit-energetique.html?IDC=6431&IDD=82988>. Accessed: 21.10.2015.

Table 10: Summary for the implementation of Article 8 in Belgium: Wallonia region.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Draft Decree currently passing through government and expected to be in force around March 2016 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Employing 250 or more employees and/or having an annual turnover exceeding EUR 50m and an annual balance sheet exceeding EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Audit requirements apply only to activities within Wallonia |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Mandatory energy audits for large enterprises AMURE and UREBA subsidies for audits |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> ISO 50001 certification Exemption for large enterprise participating in voluntary agreements |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Around 20-50% of enterprises are estimated to have carried out audits |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> An online portal is currently being developed to monitor compliance |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Administrative penalties of between EUR 250 and EUR 50,000 |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Service facilitators support companies with energy efficiency, including audits |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Service facilitator support to carry out audits |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> The eco-system is currently under development to help bring companies in line with ISO 50001 |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Through trade associations |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Publication of technical specifications Engagement through trade associations |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Trade associations Service facilitators who help to encourage the exchange of good practice between companies |

Additionally, the Wallonia region has Service Facilitators (one per sector) who offer personalised advice, knowledge and expertise and encourage exchange of good practice between members of the same sub-sector. The contact details for the Service Facilitators are provided online. A first line service answers all questions related to energy. A second line of service consists of experts who provide audits, organise seminars, provide technical training, write articles etc.³⁹

2.1.4.2. Energy management systems

There are currently no instruments addressing energy management systems in place.

2.1.4.3. Exchange mechanisms

There are no structured exchange mechanisms in Wallonia region. However, with the support of trade associations, Wallonia has published various sectoral technical specifications that describe targeted energy efficiency actions ranging from zero cost to a thorough renovation. These are free to download from the site portal of energy.⁴³

2.1.4.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Belgium (Wallonia region) is provided in Table 10. The decree mandating energy audits for large enterprises is expected to come into force in the Wallonia region around March 2016. Wallonia has also set up a pilot initiative to create an 'eco-system' label. Enterprises following this label will be in a position to achieve certification to an energy management system.³⁹

2.1.5. Bulgaria

Bulgaria established its first Energy Efficiency Act (ZEE) in 2004 (Regulation No RD-16-1058)⁴⁴, and has updated this since on many occasions in response to European Directives. The most recent update to the ZEE (Issue 35, Decree No. 84) was adopted on 15 May 2015, fully transposing the Directive 2012/27/EU and making clear, direct reference to the various Articles of the EED.⁴⁵

Implementation and administration of the ZEE is the responsibility of the Sustainable Energy Development Agency of Bulgaria (SEDA). SEDA is an executive agency of the Ministry of Energy, with responsibility for policy development and the creation of legislative instruments.

Table 11 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Bulgaria. These instruments are further detailed below.

⁴³ Energie Wallonia Website (2015). Online <http://energie.wallonie.be/fr/index.html?IDC=6018>. Accessed: 21.10.2015.

⁴⁴ Ministry Of Economy, Energy And Tourism Of The Republic of Bulgaria (2004): Energy Efficiency Act RD-16-1058. Online: <http://old.mee.government.bg/eng/norm/rdocs/mdoc.html?id=190688>. Accessed: 21.10.2015.

⁴⁵ Official Gazzette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Articles 57-60 Accessed: 21/10/2015.

Currently the Bulgarian Energy Efficiency Act addresses three key areas for targeted reduction: (1) Energy traders (through an obligations scheme); (2) public buildings of greater than 250m² (500m² up to 9 July 2015)⁴⁶; and (3) large companies and owners of industrial systems consuming more than 3,000 MWh per annum. Policy to reduce the emissions from transport is focussed on procurement and infrastructure development (e.g. rail and electric vehicles). There are no audit requirements in the transport area.⁴⁷

Table 11: Overview of instruments in Bulgaria.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | (•) | • | | | • | | | |
| Energy Efficiency and Green Economy Programme | | • | • | | | | | • | |
| Industrial Energy Efficiency Targets (IEET) for industrial energy enterprise owners | • | • | • | | | | • | | |

(•): Potential inclusion by energy threshold

2.1.5.1. Energy audits

Mandatory energy audit (Energy Efficiency Act Issue 35: Decree No. 84): In direct reference to Article 8 of the EED, the Energy Efficiency Act sets out a requirement for all large companies to undertake energy audits on a regular basis.

- **General definition:** Under the Bulgarian legislation an enterprise is defined as large if it has 250 or more employees or a turnover in excess of BGN 97.5m (EUR 50m) and a balance sheet in excess of BGN 84m (EUR 43m).⁴⁸ In addition to the requirement placed upon large enterprises using the above definition, the Bulgarian Energy Efficiency Act requires each industrial system that consumes more than 3,000 MWh of energy per annum to be subject to mandatory energy audits. Initially these were required to be conducted at least once every five years.⁴⁹ However recent amendments to the Energy Efficiency Act have confirmed the require-

⁴⁶ Official Gazette Of The Republic of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Article 38 Accessed: 21/10/2015.

⁴⁷ Personal Communication by Ms Tsvetomira Kulevska (Chief Expert, SEDA) of 15.06.2015.

⁴⁸ Legal Product Website, Law for SMEs (2010), Online: http://pravo.ovo.bg/index/zakon_za_malkite_i_srednite_predprijatija/0-380. Accessed: 21/10/2015.

⁴⁹ Sustainable Energy Development Agency Bulgaria (2014): Implementation of Mandatory programmes on Energy Audits in Bulgaria. Online: http://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/files/documents/events/bg-seda_energy_audits_4.pdf. Accessed: 21.10.2015.

ment to be every four years.⁵⁰ In addition, a new audit is required within one year of a major change in technology or equipment / production systems.⁵¹

- **Scope:** Information pre-dating the Energy Efficiency Act implied that EU-ETS installations and transport by air and sea would be exempt from the mandatory audit obligations⁴⁹, however this has not been included in Decree No. 84. An estimated 300-400 companies will be covered by the Energy Efficiency Act. Approximately 300 were covered by the previous issue of the Energy Efficiency Act.⁴⁷ As of 31 December 2014, under the previous version of the Energy Efficiency Act, a total of 208 industrial systems had been audited, identifying savings potential of 381 GWh per annum.⁴⁷
- **Exemptions:** An enterprise can comply with the Energy Efficiency Act by implementing an energy or environmental management system that is certified to an international standard as long as the system includes an energy audit.⁵² However, the required standard has not been defined and the previous issue of the Energy Efficiency Act already required enterprises that operate industrial processes consuming more than 3,000 MWh per annum to implement an energy management system.⁵³
- **Deadlines:** The deadline for the completion of mandatory energy audits has been given as within one year of the entry into force of the Energy Efficiency Act.⁵⁴ Therefore the deadline for compliance is 15 May 2016. In addition, enterprises must report to SEDA by 31 January each year on their performance against various aspects of the Energy Efficiency Act, including the number, and type, of measures implemented and energy savings arising as a result of the energy audit.⁵⁵
- **Multi-national and multi-site companies:** The process for dealing with multi-national and multi-site companies is due to be set out in a Special Ordinance under the Energy Efficiency Act. The Ordinance is currently in draft format and is expected to be adopted by the end of 2015.⁴⁷
- **Minimum coverage:** All energy purchased by the end user must be covered by audits. In addition, sampling of sites is not allowed and all activities of qualifying companies must be audited.⁴⁷
- **Penalties for non-compliance:** Non-compliance can be penalised through financial measures, or seizure of assets (usually financial). The size of the penalty de-

⁵⁰ Official Gazette Of The Republic of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Art 57 Para 3. Accessed: 21/10/2015.

⁵¹ Official Gazette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Art 57 Para 4. Accessed: 21/10/2015.

⁵² Official Gazette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Art 57 Para 7. Accessed: 21.10.2015.

⁵³ Personal Communication by Ms. Tsvetomira Kulevska (Chief Expert, SEDA) of 15.06.2015.

⁵⁴ Official Gazette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Section 9 of Additional Provisions Accessed: 21/10/2015.

⁵⁵ Official Gazette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Art 57 Para 5. Accessed: 21/10/2015.

depends on the severity of the non-compliance, and ranges from EUR 5,000 to EUR 50,000, or facing a property sanction of up to EUR 100,000.⁵⁶

- **Specific provisions for buildings:** Decree No. 84 states that it is the total amount of energy purchased by the end customer that is covered by the audit. However it is not clear if this is the responsibility of the landlord or tenant in a building where the tenant purchases the energy.⁵⁷ The Act places a requirement for audits to be carried out for public buildings. However, in official material it is implied that the requirement extends to all buildings of more than 250m².⁵⁸
- **Specific provisions for transport:** No specific provisions for transport have been identified for Bulgaria. There are no direct references made to transport energy within the Energy Efficiency Act.
- **Monitoring:** SEDA collates summary findings from all audits undertaken to monitor compliance and track progress of each company's implementation of the recommended measures. Reports will be submitted to SEDA by companies that have completed mandatory audits by 31 January of the year following the date of audit⁵⁹, the results of which will be summarised within a database to enable monitoring.

Energy Efficiency and Green Economy Programme: This programme is a joint initiative between the Ministry of Economy, Energy and Tourism and the European Bank of Reconstruction and Development (EBRD) to promote sustainable energy solutions for SMEs.⁶⁰ The objectives of the programme are to improve the efficiency and productivity of environmentally friendly technologies utilised by SMEs and to reduce the energy intensity and adverse environmental impacts by promoting environmentally friendly, low-waste and energy saving production technologies. Through this programme SMEs can apply for funding and technical support to implement energy reduction measures, or renewable energy projects. Two types of project are supported: those that are focussed on the implementation of a specific technology/improvement; and those which are energy audits. The funding utilises grant financing, which depending on the type of project, can cover up to 50% of the costs, capped at BGN 2m (EUR 1m).⁶⁰

Industrial Energy Efficiency Targets (IEET) for industrial energy enterprise owners: As part of the Energy Efficiency Act of 2008, Individual Energy Efficiency Targets (IEET) for industrial companies were established. These set energy reduction targets for 297 industrial systems with an annual consumption of more than 3,000

⁵⁶ Official Gazette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Art 103 and 105. Accessed: 21/10/2015

⁵⁷ Official Gazette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Section 1, Para 18 of Additional Provisions. Accessed: 21/10/2015.

⁵⁸ Ministry Of Economy, Energy And Tourism Of The Republic of Bulgaria (2004): Energy Efficiency Act RD-16-1058. Online: <http://old.mee.government.bg/eng/norm/rdocs/mdoc.html?id=190688>. Accessed: 21.10.2015.

⁵⁹ Official Gazette Of The Republic Of Bulgaria (2015): Decree No. 84 Energy Efficiency Act (2015). Online: <http://dv.parliament.bg/DVWeb/showMaterialDV.jsp?idMat=94263> Article 46, Para 1. Accessed: 21/10/2015.

⁶⁰ Ministry Of Economy, Energy and Tourism Of The Republic of Bulgaria (2012): Energy Efficiency and Green Economy Programme. Online: http://www.beeciff.org/cms/sites/default/files/documents/en/Information%20brochure_en.pdf. Accessed: 21.10.2015.

MWh.⁶¹ As a result of agreeing these targets, participant companies must undertake energy audits and report on energy savings. IEET will be active until 2016, however it is not clear if measurement against specific targets will continue beyond this date, but SEDA will continue to monitor the implementation rates of energy efficiency measures so that national energy savings can be reported.⁴⁷

2.1.5.2. Energy management systems

Most companies meeting the criteria set out by the Energy Efficiency Act for mandatory energy audits must also implement an energy management system.⁴⁷ This is because the IEET addresses many of those organisations already, and therefore, having an energy management system does not provide an alternative mechanism for compliance with the mandatory audit legislation. A company must both undertake energy audits and implement an energy management system. The system does not have to be accredited to any particular standard but is reviewed by SEDA for quality and scope, as there are certain criteria that it must meet.⁴⁷

2.1.5.3. Exchange mechanisms

There are no formalised instruments relating to exchange mechanisms in Bulgaria, however SEDA organises conferences and other meetings to share information with businesses on energy efficiency legislation and practice.⁴⁷

2.1.5.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Bulgaria is provided in Table 12. Article 5 of the existing Energy Efficiency Act sets out a requirement for the Director of the AUER (Sustainable Energy Development Agency) to draw up, maintain and publish on the Agency's website a list of financial mechanisms and measures for the promotion of energy efficiency. However, at the date of drafting this report (September 2015), there were no formal programmes or instruments to specifically encourage or support SMEs in undertaking energy audits. However, there are certain operational programmes that provide financial resources for the development of schemes aimed at the promotion of energy efficiency audits in SMEs, and the measures recommended as a result of the audits.⁴⁷

⁶¹ ODYSSEE-MURE (2013): Energy Efficiency In Europe, Bulgaria. Online: http://www.energy-efficiency-watch.org/fileadmin/eew_documents/Documents/EEW2/Bulgaria.pdf. Accessed: 21.10.2015.

Table 12: Summary for the implementation of Article 8 in Bulgaria.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Energy Efficiency Act (Issue 35, Decree No. 84) fully transposes the requirements of Article 8 of the EED |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Large enterprises are defined as having 250 or more employees or a turnover of more than EUR 50m and a balance sheet of more than EUR 43m In addition, any enterprise operating industrial processes with more than 3,000 MWh annual consumption must also comply with the large enterprise requirements |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> The regulations are applied based on the company's employees and turnover, or their energy consumption for industrial processes, within Bulgaria only |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> The Energy Efficiency Act mandates all large enterprises and owners of public buildings above 250m² to undertake energy audits or implement energy management systems The Industrial Energy Efficiency Targets programme mandated sites with greater than 3,000MWh annual consumption to conduct audits and implement management systems |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Energy audits are mandatory and must be undertaken even if an accredited energy management system is in place Deadline of 15 May 2016 has been set for mandatory audits |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> As of 31 December 2014, a total of 208 industrial systems had been audited, identifying savings potential of 381 GWh/a An estimated 300-400 companies will be covered by the requirements of the latest issue of the Energy Efficiency Act |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> SEDA maintains a database of participant companies and summary audit findings |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Non-compliance can result in fines or seizure of assets ranging from EUR 5,000 to EUR 50,000 |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> No information available |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Energy Efficiency and Green Economy Programme provides support to SMEs to undertake energy audits and implement the measures identified |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> SEDA reviews any energy management systems and offers advice for improvements (where SMEs are already mandated to have EMS) |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Limited engagement directly with the companies; this has mainly been carried out through the MS Chambers of Commerce and focused on the legislative requirements |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Article 5 of Energy Efficiency Act sets out a requirement for AUER to draw up, maintain and publish a list of financial mechanisms and measures for the promotion of energy efficiency |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No established exchange mechanisms |

2.1.6. Croatia

The official body responsible for the overall implementation of the third NEEAP and of Article 8 in Croatia is the Ministry of Economy. In addition, the following institutions are involved in the national implementation process:

- Investments and Environment Protection and Energy Efficiency Fund (EPEEF),
- Croatian Chamber of Economy,
- Energy Institute Hrvoje Požar,
- Centre for Monitoring Business Activities in the Energy Sector.⁶²

The Croatian energy efficiency policy mix with regard to energy audits and energy management systems is based on a range of different instruments including subsidies, loans at a low interest rate as well as information instruments for both large companies and small and medium-sized enterprises. Croatia particularly emphasises in its policy mix the instrument type of subsidies and incentives.

To ensure the availability of funding for energy audits and energy management systems, amongst other measures, the Croatian government founded the EPEEF⁶³, in 2003, which is an extra-budgetary fund that finances projects and activities in three basic areas: a) environmental protection; b) energy efficiency; and c) the use of renewable energy sources. This fund was also established to co-finance measures defined in the NEEAP. The types of financial support consist of both loans and grants. The total volume of funding amounts to between 40 and 80% of eligible costs (depending on the area).⁶⁴ Currently the fund is financed by charges on SO₂ and NO₂ emissions paid by industrial companies. The budget for the fund in the last year amounted to 1.4 billion HRK (approximately EUR 187m).⁶⁵ The fund serves partially to finance activities addressing the implementation of energy audits and energy management systems in industry related to Article 8 of the EED for both non-SMEs and SMEs. For co-financing of energy audits and/or the introduction of an energy management system in compliance with international or European standard such as ISO 50001, the EPEEF allocated HRK 1m as funding for energy audits in both large companies and SMEs in 2014 and approximately HRK 3.2m in 2015. The amount for 2016 will be determined soon.⁶²

Table 13 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Croatia. These instruments are further detailed below.

⁶² Personal communication by Mrs. Irena Dubravec (Energy Efficiency and Environmental Protection Fund) of 20.07.2015.

⁶³ For more information with regard to the energy efficiency fund in Croatian see: www.fzoeu.hr. Accessed: 19.08.2015.

⁶⁴ Rajčić, M. (2014): Supporting Energy Efficiency Activities in Croatia – Role of the Fund. Presentation held at Third Project Workshop "Monitoring of energy efficiency in the EU" ODYSSEE-MURE 25/26 September 2014, Zagreb, Croatia. Online: <http://www.odyssee-mure.eu/news/workshops/zagreb/05-Croatian-Fund.pdf>. Accessed: 27.04.2015.

⁶⁵ At the moment the revenues in the fund include charges for environmental emissions of SO₂ and NO₂, based on volumes produced by legal and natural persons through business activities per calendar year, non-hazardous industrial waste charge based on volumes deposited on disposal sites, charges for hazardous waste, special environmental charges for motor vehicles paid upon annual registration/technical certification of vehicles. (see: <http://www.mvep.hr/zakoni/pdf/644.pdf>. Accessed: 27.04.2015).

Table 13: Overview of instruments in Croatia.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulation & standards | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit ¹ | • | (•) | • | | | • | | | |
| Subsidies for energy audits in large companies | • | | • | | | | | • | |
| Subsidies for energy audits in SME | | • | • | | | | | • | |
| (Industrial Energy Efficiency Networks (IEEN)) | (•) | (•) | | | (•) | | | | (•) |
| ¹ secondary legislation is not in force yet; note lower financial ceiling thresholds which also covers companies that are SME according to EU definition (•): design and framework conditions of this programme still under discussion | | | | | | | | | |

2.1.6.1. Energy audits

Mandatory energy audits in large companies (Zakon o energetskej učinkovitosti; English: Energy Efficiency Act): The Croatian government announced in its third NEEAP the amendment of the regulation that will pertain to the obligations to conduct energy audits for large companies. The national law that transposes Article 8 of the EED in Croatia is the Energy Efficiency Act.⁶⁶ The Croatian government is currently discussing a rulebook to further specify the framework conditions and minimum requirements for mandatory audits for large companies as secondary legislation. As this secondary legislation is still under discussion and not yet published, the following description is based on preliminary information from both the primary legislation and interviews conducted within this study.

- **General definition:** According to Article 4 No. 69 Energy Efficiency Act 2014, large companies have to fulfil at least two of the following criteria to fall under the regulation to conduct mandatory energy audits: (a) at least 250 employees during the previous business year; and/or (b) a revenue of at least HRK 260 m (approximately EUR 34m); and/or (c) total assets of at least HRK 130 m (approximately EUR 17m).⁶⁶ The definition for non-SMEs applied in Croatia is therefore different from the definition provided by the European Commission. This leads to an extension of the target group in comparison to the definition from the European Commission.
- **Scope:** No information is available on exemptions. The Croatian Ministry of Economy indicates in its third NEEAP a total sum of 144 large companies with a total of 206,144 employees that are obliged to conduct an energy audit.⁶⁷

⁶⁶ Zakon HR (2015): Zakon o energetskej učinkovitosti; English: Energy Efficiency Act. Online: <http://www.zakon.hr/z/747/Zakon-o-energetskej-u%C4%8Dinkovitosti>. Accessed: 03.08.2015.

⁶⁷ Ministry of Economy (2014): The third National Energy Efficiency Action Plan for the 2014-2016 period. Online: http://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_croatia.pdf. Accessed: 28.04.2015.

- **Exemptions:** The implementation of an energy or environmental management system according to international or European standards is also compliant with Article 8 of the EED.⁶⁸ However, only a few companies have implemented an energy management system in line with ISO 50001 so far.⁶²
- **Deadlines:** All companies covered by the regulation in Croatia have to complete an energy audit by 5 December 2015. According to the Energy Efficiency Act energy audits have to be conducted every four years thereafter.⁶²
- **Multi-national companies:** No information available yet.
- **Multi-site companies:** No information available yet.
- **Minimum coverage:** No information available yet.
- **Penalties for non-compliance:** According to Article 38 No. 1 Energy Efficiency Act 2014, large companies have to pay a fine of HRK 20,000 (approximately EUR 2,650) to HRK 500,000 (approximately EUR 66,225) if they do not conduct an energy audit by 5 December 2015. For a person in charge (e.g. director of the company) an additional fine of HRK 2,000 (approximately EUR 260) to HRK 15,000 (approximately 2,000 EUR) has to be paid. Both penalties may potentially have to be paid at the same time.⁶²
- **Specific provisions for buildings:** No information available yet.
- **Specific provisions for transport:** No information available yet.
- **Monitoring:** The Ministry of Economy intends to set up a register for monitoring energy audits. Details regarding the collection of data are not yet available.⁶²

Subsidies for energy audits in large companies: In order to support companies in implementing obligatory energy audits, the third NEEAP contains the announcement of a co-financing instrument. The aim of this measure is to aid such companies in fulfilling the aforementioned obligation by granting them a subsidy for conducting energy audits. Thus, EPEEF received instructions from the Croatian Ministry of Economy to draw up a subsidy programme. The main goal is to set up, together with EIHP (Energy Institute Hrvoje Požar), an Energy Audit Scheme for industry which aims to establish and promote the implementation of cost-effective energy efficiency measures in industry and which is also in line with the legal obligation. Monitoring, which documents the fulfilment of the obligation, is also envisaged. The corresponding public call for subsidies for large companies is "Public call (EE-6/2015) for direct co-financing of energy audits of buildings and structures and the introduction of management systems (management) energy in accordance with the standard ISO 50001 in large enterprises", which has been open since March 2015. A total amount of up to HRK 50,000 (approximately EUR 6,600) could be requested by companies until 5 December 2015. Thereafter this funding is no longer available since energy audits become mandatory.⁶⁹

⁶⁸ Zakon HR (2015): Zakon o energetskej učinkovitosti; English: Energy Efficiency Act. Online: <http://www.zakon.hr/z/747/Zakon-o-energetskej-u%C4%8Dinkovitosti>. Accessed: 03.08.2015.

⁶⁹ Lokalna akcijska grupa (2015): Public initiation for direct co-financing of energy audits of buildings and structures and the introduction of management systems (management) of energy in accordance with the standard DIN EN ISO50001 in large enterprises. Online: <http://www.lag-istocnaistra.hr/natjecaj-detajlno.php?lg=hr&id=17>. Accessed: 20.08.2015.

Subsidies for energy audits in SMEs: The overall goal of this instrument is to promote energy audits in SMEs by offering them financial support for the continuous improvement of energy efficiency in the company as well as providing them with educational support. The financial support is granted by EPEEF, which is publishing a call for tender for financing energy audits of SME buildings at least once per year.⁷⁰ The recently published tender by EPEEF is the “Public call (EE-7/2015) for direct co-financing of energy audits of buildings and structures and the introduction of management systems (management) energy in accordance with the standard DIN EN ISO 50001 in SME for individuals” which opened in March 2015. The conditions for funding are the same as for large enterprises. A total amount of up to HRK 50,000 (approximately EUR 6,600) could be requested by companies until the submission deadline of 31 December 2015.⁷¹

2.1.6.2. Energy management systems

Subsidies for large companies as well as for SMEs can be requested for the introduction of energy management systems in the Public call EE-6/2015 (large companies) and EE-7/2015 (SMEs) (see above).

2.1.6.3. Exchange mechanisms

Industrial Energy Efficiency Networks: The main objective of Industrial Energy Efficiency Networks (IEEN) is to increase the awareness and knowledge of the management and employees of industrial companies regarding the implementation of energy efficiency measures. Therefore, management structures for the continuous analysis of energy consumption as well as targets and monitoring activities will be introduced within IEEN. The design and process of these networks is currently under discussion. Drawing up a network programme for which the EPEEF is responsible is one of the future activities foreseen. Furthermore, the Croatian Chamber of Economy, Energy Institute Hrvoje Požar and the Centre for Monitoring Business Activities in the Energy Sector are involved in this process.⁶² The programme will mainly include a selection of the key branches in industry for the implementation of activities, a detailed proposal of energy efficiency measures for each branch, and an implementation plan for those measures. The programme will also set the amounts required for the implementation of measures and co-financing mechanisms. The definition of minimum requirements and of the framework conditions is currently under discussion.⁷²

⁷⁰ Ministry of Economy (2014): The third National Energy Efficiency Action Plan for the 2014-2016 period. Online: http://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_croatia.pdf. Accessed: 28.04.2015.

⁷¹ Lokalna akcijska grupa (2015): PUBLIC INVITATION for direct co-financing of energy audits of buildings and structures and the introduction of management systems (management) of energy in accordance with the standard DIN EN ISO50001 in SMEs, for individuals (CRAFT). Online: <http://www.lag-istocnaistra.hr/natjecaj-detaljno.php?lg=hr&id=18>. Accessed: 20.08.2015.

⁷² EIHP (2014): Industrial Energy Efficiency Network. Measure description from Odyssee Mure database. Online: http://www.measures-odyssee-mure.eu/public/mure_pdf/industry/CR8.PDF. Accessed: 28.04.2015.

Table 14: Summary for the implementation of Article 8 in Croatia.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Energy Efficiency Act (Zakon o energetskej učinkovitosti) Secondary legislation not in force yet |
| | How are large enterprises defined? | <ul style="list-style-type: none"> At least two of the following criteria have to be fulfilled: (a) ≥ 250 employees during the previous business year and/or (b) a revenue of \geq HRK 260 m (approximately EUR 34 m) and/or (c) total assets of \geq HRK 130 m (approximately EUR 17 m) |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> No information available yet |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Subsidies from EPEEF for large companies to conduct energy audits |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Implementation of an energy or environmental management system according international or European standards also compliant to Article 8 of the EED |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No information available |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Ministry of Economy will set up a register for energy audits, further information still pending |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Article 38 No. 1 Energy Efficiency Act 2014: fine of HRK 20,000 (approx. EUR 2,650) to HRK 500,000 (approx. EUR 66,225) if company does not conduct energy audit until 5 December 2015, for a person in charge (e.g. director of the company) additional fine of HRK 2,000 (approx. EUR 260) to HRK 15,000 (approx. EUR 2,000) |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Establishment of support schemes and information exchange via several instruments, e.g. Industrial Energy Efficiency Networks |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Financial and educational support for energy audits in SMEs (by EPEEF) |
| Management | What schemes have been introduced to help implementation management systems? | <ul style="list-style-type: none"> Financial and educational support for energy management systems in SMEs (by EPEEF) |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> In cooperation with Croatian Chamber of Economy, Energy Institute Hrvoje Požar, Center for Monitoring Business Activities in the Energy Sector and Investments and Environment Protection and Energy Efficiency Fund, the Croatian government established permanent opportunities for SMEs to getting answers and information via web portals/pages |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> The mentioned institutions are available for technical assistance and targeted information next to private consultants |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Croatian Chamber of Economy, Energy Institute Hrvoje Požar, Center for Monitoring Business Activities in the Energy Sector and Investments, Environment Protection and Energy Efficiency Fund |

2.1.6.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Croatia is provided in Table 14. The rulebook that formalises the framework conditions and minimum requirements for the implementation of mandatory energy audits in large companies will be published soon. Furthermore, the planned audit register organised by the Ministry of Economy will be published. Regarding instruments for the promotion of energy audits, Croatia is currently undertaking the design process for setting up IEENs. Thus, the first IEENs are anticipated to be established next year.

2.1.7. Cyprus

The Energy Department of the Ministry of Energy, Commerce, Industry and Tourism is the competent authority for the implementation of Article 8. Cyprus has a good record of delivering energy reductions in line with national targets. Many of the provisions of Article 8 of the EED had already been included in existing regulations (the Energy Efficiency in End Use and Energy Services (Energy Auditors) Regulations of 2012 (Regulatory Administrative Act 184/2012)⁷³ and Decree on the Methodology and Other Requirements for Conducting Energy Audits (RAA 171/2012). The remaining provisions of Article 8 will be included in the Law on Energy Efficiency in End Use and Energy Services (Amending Law), which is anticipated to be voted into law during autumn 2015.⁷⁴

One of the main mechanisms in place to encourage energy audits and management amongst SMEs is the EU Cohesion Fund under the Operational Programme "Competitiveness and Sustainable Development".⁷⁵ It includes grants of up to EUR 200k for energy audits and for the implementation of the recommendations included in the energy audit report. Table 15 provides an overview of the instruments directly related to energy audits, energy management systems and exchange mechanisms that are currently implemented in Cyprus. These instruments are further detailed below.

Table 15: Overview of instruments in Cyprus.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (●) | | (●) | | | (●) | | | |
| (●): Primary and secondary documents not in force yet | | | | | | | | | |

⁷³ Ministry of Energy, Commerce, Industry and Tourism (2012). Online: [http://www.mcit.gov.cy/mcit/mcit.nsf/All/5D6DEF111AE3CF55C22575C5002BFED5/\\$file/ΚΔΠ%20184_2012%20-%20Ενεργειακοί%20Ελεγκτές%20Κανονισμοί%20του%202012.pdf](http://www.mcit.gov.cy/mcit/mcit.nsf/All/5D6DEF111AE3CF55C22575C5002BFED5/$file/ΚΔΠ%20184_2012%20-%20Ενεργειακοί%20Ελεγκτές%20Κανονισμοί%20του%202012.pdf). Accessed: 15.10.2015.

⁷⁴ Personal communication by Katerina Piripitsi and Giannis Thoma (Ministry of Energy) of 20.05.2015.

⁷⁵ European Commission (2014) Online: http://ec.europa.eu/regional_policy/en/atlas/programmes/2014-2020/cyprus/2014cy16m1op001. Accessed: 15.10.2015

2.1.7.1. Audits

Mandatory energy audit (Energy Efficiency in End Use and Energy Services Regulations (2015 amendment): Cyprus has established a number of regulations and laws in relation to energy auditing. These are mainly concerned with the quality, scope and coverage of audits, and pay particular attention to the establishment of a registry of qualified personnel to undertake audits.

Laws 181, 183 & 185⁷³ have been harmonised in an impending amendment to the existing Energy Efficiency in End Use and Energy Services Regulations. It is understood that within this amendment, the requirements of Article 8 will be fully implemented through the introduction of a mandatory requirement for large enterprises to undertake energy audits.

- **General definition:** Large companies that must conduct an energy audit are defined as those with more than 250 employees and a turnover of more than EUR 50m.⁷⁴ This is therefore not aligned with the guideline definition provided by the European Commission. Information on the energy audit requirements has been sent by letter from the Energy Ministry to all companies meeting the large enterprise definition.
- **Scope:** There are no exemptions from the obligation for large enterprises to carry out an energy audit in Cyprus. The Energy Ministry anticipates that around 100 large companies in Cyprus will be required to comply with the regulations and undertake energy audits or implement energy management systems. However, it is understood that no optional or mandatory energy audits have been conducted so far by auditors included in the Registry of Energy Auditors of Cyprus. Energy audits carried out to date have mainly been related to ensuring compliance with grant schemes that have previously been in place.
- **Exemptions:** Large companies may also comply with the legislation through the implementation of energy management systems that include an audit function, and completion of audits by appropriately qualified/registered individuals. In these instances they must be accredited to a recognized international standard e.g. ISO 50001. The use of environmental management systems (e.g. ISO 14001) for compliance is under consideration but, even if acceptable, would require companies to undertake energy audits as part of the process.
- **Deadlines:** Companies must notify the Energy Ministry of their compliance with the legislation by 5 December 2015.
- **Multi-national and multi-site companies:** The Energy Ministry is currently taking legal advice on whether the general definition for large companies should be applied to the 'in country' activities of a company or whether all European/international activities should be accounted for at the group level. Thus, this is not specified yet.
- **Minimum coverage:** No minimum coverage requirements have been specified for Cyprus.
- **Penalties for non-compliance:** Non-compliance will result in company fines of up to EUR 30k.
- **Specific provisions for buildings:** No specific provisions were identified for buildings. However, Cyprus has existing programmes aimed at improving the energy performance of commercial and industrial buildings.⁷³

- **Specific provisions for transport:** No specific provisions for transport have been identified for Cyprus.
- **Monitoring:** The Ministry of Energy, Commerce, Industry and Tourism keeps a registry of enterprises that are not SMEs for the purpose of enforcing the obligation for an energy audit. Within the registry, enterprise details are kept regardless of whether the audit is carried out by an independent or an in-house certified energy auditor, or the organisation is exempt due to implementation of an energy or environmental management system that includes audits.⁷⁴

2.1.7.2. Energy management systems

SMEs with an energy management system can qualify for funding under the Cohesion Fund, providing that the energy management system includes an audit. There is also a more general move by the Cyprus Organisation for Standardisation to make energy management systems more widespread across SMEs – to help achieve this it has been delivering a series of promotional activities such as seminars and webinars.

2.1.7.3. Exchange mechanisms

The Cyprus Organisation for Standardisation holds events to inform all types of enterprise about the benefits of energy management systems. These events include the exchange of good practice information. The Energy Ministry and its advisory panel have been supporting the communication of the benefits of energy audits and management systems through a series of events aimed at organisations of all sizes. The events have also been supported by the Cyprus Employers' Federation and promoted through their membership. Engagement with SMEs has been coordinated through the Employers' Federation. Membership of this federation includes over 95% of registered SME companies in Cyprus. The Cyprus Energy Organisation is developing a focussed SME leaflet on the availability of auditors and benefits of audit/management systems. The Energy Department also participates in events which provide good practice information on energy management systems in SMEs.⁷⁴

2.1.7.4. Further implementation plan

The Energy Department has informed both the representatives of SMEs and households on the benefits of energy audits during events, expositions and meetings, through information leaflets published and distributed for this purpose, as well as through its website. At the time of this research further work was planned to develop the engagement mechanisms with SMEs.

A summary of the current activities related to the implementation of Article 8 in Cyprus is provided in Table 16.

Table 16: Summary for the implementation of Article 8 in Cyprus.

| Large enterprises | | |
|------------------------------------|--|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Harmonized Laws 181, 183 & 185 transpose the requirements of the EED Article 8 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Large enterprises are defined as those with 250 or more employees and a turnover of more than EUR 50m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> The Energy Ministry is currently taking legal advice on whether the definition should be applied at the 'in country' activities of a company or whether all European/international activities should be accounted for at the group level |
| Implementation | What instruments has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> No specific mechanisms implemented |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Energy management systems that include an audit function Use of environmental management systems is under consideration but even if acceptable would require companies to undertake energy audits as part of the process |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Energy Ministry anticipates that around 100 companies will be required to comply; as of 31 December 2013, no mandatory audits had been completed |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Information on the laws and their requirements have been communicated to all companies employing at least 250 employees by letter from the Energy Ministry Companies must notify the Energy Ministry of their compliance by 5 December 2015 |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Non-compliance will result in fines of up to EUR 30k |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Financing scheme for innovation in buildings of 1000m² floor area (or under, depending on energy performance improvement), provides up to 50% funding for audit and implementation up to EUR 200k |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> As above, funding is available to cover the cost of audits but only as part of funding the implementation of recommendations and dependent upon the energy reduction potential |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Ministry of Energy advisory panel supports interaction with SMEs on energy audits and management systems The Cyprus Energy Organisation has also been advising SMEs via a leaflet of the availability of auditors and benefits of audit/management systems |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Engagement with SMEs regarding energy audits and management systems has been coordinated through the Employers Federation |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> SMEs have been advised of the availability of energy auditing professionals |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No specific networks or organisations have been established; however the Cyprus Employers Federation has delivered a number of seminars, presentations and other such events to raise awareness |

2.1.8. Czech Republic

Responsibility for the implementation of Article 8 in the Czech Republic sits with the Ministry of Industry and Trade. The Czech Republic established its first Energy Saving (or Management) Act in 2000,⁷⁶ and has updated this since on many occasions in response to arising European Directives. The most recent update to the Act (Amendment No. 103/2015) came into force on 1 July 2015, fully transposing Article 8 of the EED and making clear, direct reference to other Articles. This amendment refines an existing requirement for large enterprises to undertake mandatory energy audits.

In addition, secondary legislation has been introduced (Decree no. 213/2001⁷⁷), which sets out minimum criteria for energy-efficiency audits and establishes the arrangements for ensuring compliance with them.

As described above, the Czech energy efficiency policy with regard to energy audits and energy management systems is mainly based on the provisions of the amended Energy Efficiency Act. Table 17 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in the Czech Republic. These instruments are further detailed below.

Table 17: Overview of instruments in the Czech Republic.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | (•) | • | | | • | | | |
| (•): Possibly additional inclusion due to energy threshold | | | | | | | | | |

2.1.8.1. Energy audits

Mandatory energy audit: In direct reference to Article 8 of the EED, the Czech Energy Efficiency Act sets out a requirement for all large companies to undertake energy audits on a regular basis.

- **General definition:** Under the Czech legislation (Amendment No. 103/2015) no specific definition of a large enterprise is made. The legislation simply refers to the requirement as applying to any enterprise that is not an SME.⁷⁸ There is guidance, through various legal interpretations⁷⁹, that this reference implies the EU definition of an SME must be applied. Nevertheless, ambiguity remains both in terms of

⁷⁶ Energy Saving Act 406/2000, also referred to as Energy Management Act in later amendments.

⁷⁷ Ministry of Industry and Trade (2001): Decree no. 213/2001 Coll. Online: http://www.eis.cz/dokumenty/147_5_0_12005-10-27_17-16-28.htm Accessed: 16.10.2015

⁷⁸ House of Commons (2014): Government Bill amending Act no. 406/2000 Coll. on energy management, as amended, and Act no. 634/2004 Coll., on administrative fees, as amended. Online: <http://www.psp.cz/sqw/text/tiskt.sqw?O=7&CT=301&CT1=0> : Item 37 referring to Section 9 of the Energy efficiency Act, Accessed: 16.10.2015

⁷⁹ bnt (2015): The Energy Audit After July 2015. Online: <https://www.bnt.eu/en/legal-news/1938-the-energy-audit-after-1-july-2015>, Accessed: 16.10.2015

whether both financial and employee number threshold criteria need to be met in order to be defined as a large enterprise, and the level at which the criteria should be applied (e.g. single entities or linked/group entities). This ambiguity means that some small operations in the Czech Republic that are either linked to other enterprises within the country or part of international groups may be required to undertake mandatory audits despite not reaching the criteria thresholds individually or within country. In addition to the requirements placed upon large enterprises using the above definition the Ministerial Decree 213/2001⁷⁷, which transposes the secondary legislation relating to the scope of mandatory energy audits, also introduces an energy threshold at which audits are required. It is not clear however if this is part of the definition of large enterprises, i.e. that only large enterprises with energy consumption above 35,000 GJ need to comply, and if so how this affects the numbers of companies affected by the regulation.⁸⁰ It may also be the case that the energy consumption threshold is intended to be additional to the employee and financial criteria defining large enterprises. If so, the implication is that some SMEs with large energy consumption could be required to undertake audits.

- **Scope:** There are no exemptions to the Czech Republic legislation for mandatory energy audits. An estimated 2,150 companies will be covered by the revised Energy Efficiency Act⁸¹. It is estimated that around 1,500 energy audits have currently been conducted across all sectors in the Czech Republic every year since 2008.⁸²
- **Exemptions:** Any company meeting the criteria set out by the Energy Efficiency Law for mandatory energy audits can comply with the legislation by implementation of an energy management system that is certified to ISO 50001 or an environmental management system that is certified to ISO 140001. However, either certified management system must include an energy audit completed by the 5 December deadline to be considered compliant.
- **Deadlines:** In line with the EED, the deadline for completion of mandatory energy audits has been set as 5 December 2015. Audits are required every four years. The Czech legislation allows for audits undertaken since 1 July 2012 to be used for compliance purposes, so long as they meet the audit scope defined in Ministerial Decree 213/2001.⁸³
- **Multi-national companies:** As stated above, the criteria for large enterprise qualification are not clearly defined and therefore it is unclear if they should be applied to individual companies or those linked as part of a group.

⁸⁰ Ministry of Industry and Trade (2001): Decree no. 213/2001 Coll. Online:

http://www.eis.cz/dokumenty/147_5_0_12005-10-27_17-16-28.htm. Accessed: 19.10.2015.

⁸¹ House of Commons (2014): Government Bill amending Act no. 406/2000 Coll. On energy management, as amended, and Act no. 634/2004 Coll., on administrative fees, as amended. Online: <http://www.psp.cz/sqw/text/tiskt.sqw?O=7&CT=301&CT1=0> : Page 26, Table 3.2, Accessed: 16.10.2015

⁸² Ministry of Industry and Trade (2014): National Energy Efficiency Action Plan of the Czech Republic.

⁸³ Ministry of Industry and Trade (2001): Decree no. 213/2001 Coll. Online: http://www.eis.cz/dokumenty/147_5_0_12005-10-27_17-16-28.htm Section 4, paragraph 4. Accessed: 16.10.2015

- **Multi-site companies:** Within Ministerial Decree 213/2001, there is clear reference to the acceptability of single audits that cover multiple buildings/processes that can be proven as similar or the same⁸⁴.
- **Minimum coverage:** There are no allowances for minimum coverage by audits.
- **Penalties for non-compliance:** Non-compliance can be penalised through substantial financial measures of up to EUR 180,000.⁸⁵
- **Specific provisions for buildings:** No specific criteria are set for buildings. The legislation implies that responsibility for compliance rests with the user of the energy rather than the building owner. Amongst the data required to be reported on the energy audits is a list of all buildings, indicating the purpose of each one.⁸⁶
- **Specific provisions for transport:** No reference is made to transport within the Czech legislation.
- **Monitoring:** Implementation and administration of the Energy Efficiency Act is the responsibility of the Ministry of Industry and Trade, which will develop a database on the information reported from each energy audit undertaken. Some detail is available on the data required to be reported to the Ministry.⁸⁶ This includes: (a) the name of the subject of the energy audit; (b) a basic description of the audit; (c) characteristics of the main activities within the scope of the audit (range of products, production technologies); (d) site plan; and (e) list of all buildings and their purposes.

According to Section 5 Para (4) of 406/2000, subsidies may be granted to promote the efficient use of energy for SMEs and households and for the advice and the promotion of energy services.⁸⁷

2.1.8.2. Energy management systems

Energy management systems are not regulated by law in the Czech Republic. Energy management support is provided under the State Programme on the Promotion of Energy Savings and the Utilisation of Renewable Energy Sources. This supports regions and cities with certification to ISO 50001, and therefore does not apply to enterprises.⁸²

⁸⁴ Ministry of Industry and Trade (2001): Decree no. 213/2001 Coll. Online: http://www.eis.cz/dokumenty/147_5_0_12005-10-27_17-16-28.htm Section 10, paragraph 6. Accessed: 16.10.2015

⁸⁵ Law-Now (2015): Increased number of businesses obliged to undertake an energy audit. Online: <http://www.cms-lawnow.com/ealerts/2015/08/increased-number-of-businesses-obliged-to-undertake-an-energy-audit>. Accessed: 19.10.2015

⁸⁶ Ministry of Industry and Trade (2001): Decree no. 213/2001 Coll. Online: http://www.eis.cz/dokumenty/147_5_0_12005-10-27_17-16-28.htm Section 4, paragraph 2. Accessed: 16.10.2015

⁸⁷ House of Commons (2014): Government Bill amending Act no. 406/2000 Coll. On energy management, as amended, and Act no. 634/2004 Coll., on administrative fees, as amended. Online: <http://www.psp.cz/sqw/text/tiskt.sqw?O=7&CT=301&CT1=0> : Item 14, Accessed: 16.10.2015

Table 18: Summary for the implementation of Article 8 in the Czech Republic.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Energy Efficiency Act 406/2000 as amended by 103/2015 and supplemented by Ministerial Decree 213/2000, fully transposes the requirements of Article 8 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Defined only as being not SMEs; in addition, any enterprise consuming more than 35,000 GJ per annum appears to be covered by the mandatory audit requirement |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Arrangements for multi-national companies are not clearly defined in the legislation |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Under the Czech Energy Efficiency Act large enterprises must carry out energy efficiency audits at least every four years; obligation is derived directly from Czech law |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Exemption from mandatory energy audits can be granted if an energy management system certified to ISO 50001 or an environmental management system certified to ISO 14001 is in place and includes an energy audit |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Around 1,500 audits have been undertaken each year since 2008 |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Implementation and administration of the Energy Efficiency Act is the responsibility of the Ministry of industry and Trade, however it is not clear how the Ministry will monitor compliance or the effect of the regulation |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Non-compliance penalized through substantial financial measures of up to EUR 180,000 |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> SMEs with an energy consumption exceeding 35,000 GJ per annum must under energy audits. |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Government subsidies may be granted. The EFEKT programme supports and funds energy efficiency in businesses |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> The EFEKT programme can support energy management |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> No information available |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No information available |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No information available |

2.1.8.3. Exchange mechanisms

The EFEKT (Effect) programme was set up by the Ministry of Industry and Trade to promote energy efficiency measures and energy management to business and the wider public. In 2015, CZK 30m (~EUR 1m) in funding was available through this programme. Energy efficiency advice for businesses can be financed by up to 100% up to a limit of CZK 300,000 (EUR 10,900).⁸⁸

2.1.8.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in the Czech Republic is provided in Table 18. In May 2015, the Czech Republic Ministry of Industry and Trade published a call for programmes to support energy efficiency projects. This is worth CZK 5 billion (~ EUR 182m). Successful small enterprises will receive grants of up to 50% of project value, medium-sized enterprises up to 40%, and large enterprises up to 30%.⁸⁹ New Cohesion funded projects are currently being prepared within the Czech Republic, but details regarding the content and aims of these projects are not yet available.

2.1.9. Denmark

Denmark has a long history of focussing on voluntary agreements to promote energy efficiency improvements in industry. Since 1996 Denmark has implemented the reimbursement of a CO₂ tax in return for the implementation of an energy management system in line with ISO 50001 (formerly EN 16001) by industrial companies with significant energy consumption. The participating companies agreed on a binding three-year agreement wherein they had to implement the international energy management standard DS/EN ISO 50001, conduct special investigations of the business's energy consumption, and implement all energy efficiency projects (related to the energy included by the agreement) with a simple payback time of four years or less.⁹⁰ Due to a reform of the electricity tax system, the Danish voluntary agreement scheme was terminated at the end of 2013. To compensate for this, the Ministry of Climate, Energy and Building published, in its third NEEAP, a series of measures which promote energy audits and energy management systems in Denmark. Table 19 provides an overview of these instruments which are described in further detail below.

⁸⁸ EFEKT Programme (2015): Online: <http://www.mpo-efekt.cz/cz/programy-podpory/54083> Accessed: 19.10.2015

⁸⁹ Ministry of Industry and Trade (2015): Announcement of the call programme supporting energy savings. Online: <http://www.mpo.cz/dokument158278.html>. Accessed: 19.10.2015.

⁹⁰ Danish Energy Agency (2011): The Danish voluntary agreement scheme. Online: <http://www.ens.dk/sites/ens.dk/files/consumption-savings/energy-consumption-production-industries/voluntary-agreements-industry-energy/the%20danish%20voluntary%20agreement%20scheme%20240612.pdf>. Accessed: 24.07.2015.

Table 19: Overview of instruments in Denmark.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Energy saving obligation targeted at energy companies | • | • | • | | | | | • | |
| 'VE til proces' scheme (RE for production process) | | • | • | | | | | • | |
| Energy management light | | • | | • | | | | | • |
| Voluntary agreement | • | • | | • | | | • | | |

2.1.9.1. Energy audits

Mandatory energy audit: In Denmark, the primary legislation regarding the Article 8 obligation to conduct an energy audit is law No. 345 of 8 April 2014 on obligatory energy audit in large commercial enterprises (Law amending the Law on the Promotion of savings in energy consumption, the Heat Supply Act, Act on Municipal cooling and various other Acts; in Danish: Lov om ændring af lov om fremme af besparelser i energiforbruget, lov om varmforsyning, lov om kommunal fjernkøling og forskellige andre love).⁹¹ The corresponding interpretation guideline called 'Order in mandatory energy audits for large companies' was published in November 2014 by the Danish Energy Agency.⁹²

- **General definition:** According to §2 (1) of Order No. 1212/2014 (pursuant to §16 (1) and §21 (3) of the Act on the promotion of savings in energy consumption no. 1065 of 12 November 2012 as amended by Law no. 345 of 8 April 2014), a large enterprise is a company which globally has (a) at least 250 full-time employees and (b) an annual turnover of at least EUR 50m or an annual balance of at least EUR 43m calculated according to annual financial statements.⁹³ The enterprise must fulfil at least one of the two financial criteria which is not in line with the EC definition. Energy audits are mandatory for enterprises from all sectors including transport activities such as shipping and aviation.⁹⁴ The definition also covers public companies that operate in the market.⁹⁴

⁹¹ Klima-, Energi- og Bygningsministeriet (2014): Law amending the Law on the Promotion of savings in energy consumption, the Heat Supply Act, Act on Municipal cooling and various other acts. Online: <https://www.retsinformation.dk/pdfPrint.aspx?id=162569>. Accessed: 06.09.2015.

⁹² The Danish Energy Agency published a short guideline which aims to support the interpretation of the primary legislation in Denmark. Please see: Danish Energy Agency (2014): Order in mandatory energy audits for large companies. Online: http://www.ens.dk/sites/ens.dk/files/forbrug-besparelser/EE_ny_web/Dokumenter/courtesy_translation_regulation_on_energy_audits.pdf. Accessed: 23.07.2015.

⁹³ Klima-, Energi- og Bygningsministeriet (2014): Klima-, Energi- og Bygningsmin., Energistyrelsen, j.nr. 3007/3015-0001 Order on mandatory energy audits for large companies (Bekendtgørelse om obligatorisk energisyn i store virksomheder). <http://faolex.fao.org/docs/pdf/den138729.pdf>. Accessed: 06.09.2015.

⁹⁴ Danish Energy Agency (2014): Order in mandatory energy audits for large companies. Online: <http://www.ens.dk/sites/ens.dk/files/forbrug->

- **Scope:** Companies with an annual energy consumption of less than 100,000 kWh are exempted from the regulation.⁹⁴ At present Denmark expects 500 enterprises to be covered by the obligation to conduct an energy audit, of these only a few have implemented an energy audit so far.⁹⁵
- **Exemptions:** Large enterprises can satisfy the obligation by using and maintaining a certified energy or environmental management system that includes an energy review. Therefore the company has to submit documentation that proves that it is maintaining an energy or environmental management system according to the requirements mentioned in Annex VI of the EED. Afterwards this must be verified by an accredited energy auditor. Accreditation can be provided by the Danish accreditation body (DANAK). The third NEEAP states that a similar recognised accreditation body that has signed the European Organisation for Accreditation's (EA's) multilateral agreement on mutual recognition can also provide the accreditation.⁹⁵
- **Deadlines:** The mandatory energy audit has to be carried out at least every fourth year, calculated from the date of the previous audit. Companies have until 1 March 2016 to submit their energy audit report. Energy audits that have been carried out between 4 December 2012 and 1 July 2013 count towards the enterprise's fulfilment of the requirement according to the third NEEAP.⁹⁴
- **Multi-national companies:** As stated above (section definition), the calculation of the qualification thresholds (total number of employees, total turnover and balance sheet) is based on global figures. Thus, all international sites of multi-national companies must be considered. Large companies are obliged to ensure that all sites located in Denmark conduct an energy audit.⁹⁶
- **Multi-site companies:** The calculation of the qualification thresholds (number of employees, turnover and balance sheet total) also includes subsidiaries and other enterprises, where the enterprise has over 25% of the ownership or voting rights.
- **Minimum coverage:** Up to 10% of the total energy consumption in the company in Denmark can be exempted from audit. Elements of the enterprise subject to the BAT (Best Available Technique) conclusions⁹⁷ in the context of an environmental permit under the Environmental Protection Act (when BAT conclusions relate to energy consumption) are also allowed to be exempted. Additionally, vessels of less than 5,000 gross tonnes and also building and civil engineering projects can be exempted. It is not necessary to undertake an energy audit at a construction site, but the contractor needs to undertake an energy audit of its machinery at the site.⁹⁶
- **Penalties for non-compliance:** The Danish legislation does not define the size of penalties for non-compliance. Thus, the definition will be the responsibility of the Danish court. If a company does not comply with the deadline to submit an energy audit summary and/or report by 1 March 2016, this company will receive a re-

besparelser/EE_ny_web/Dokumenter/courtesy_translation_regulation_on_energy_audits.pdf. Accessed: 23.07.2015.

⁹⁵ Energistyrelsen (2014): Denmark's National Energy Efficiency Action Plan (NEEAP). Online: http://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_denmark.pdf. Accessed: 28.10.2015.

⁹⁶ Personal communication by Ms. Anne Lund Andersen (Confederation of Danish Industry) of 24.08.2015.

⁹⁷ The BAT conclusions are a part of the Environmental Protection Act. The purpose of this act is to limit pollution. To get an environmental approval companies need to make an agreement with the Danish Environmental Protection Agency where the company agrees to use the best available technology (BAT). The European Commission has listed the best available technology in the BAT reference documents.

minder and a deadline for compliance. If there is still no compliance within the deadline, the sanctions (fines) will be in the responsibility of the Danish court.⁹⁸

- **Specific provisions for buildings:** For energy audits concerning buildings with a valid energy label, the audit can be based on the data associated with the energy label.⁹⁴ Generally, the landlord is responsible for the energy audit in Denmark.⁹⁶
- **Specific provisions for transport:** The transportation obligation is met if the transport company holds a green certification from the Transport Authority⁹⁹, which is valid until 1 March 2016. Furthermore Vessels with less than 5,000 gross register tonnes are exempted from the regulation in Denmark.⁹⁴
- **Monitoring:** Every large company has to provide a report with the results from its energy audit to the Danish Energy Agency no later than 1 March 2016.

Energy saving obligation targeted at energy companies (Counselling or subsidy for the implementation of energy savings from the energy companies): In 2006, to meet the requirements from Article 7 of the EED, Denmark set up an Energy Efficiency Obligation Scheme. This scheme places a duty on energy companies to ensure an increasing amount of energy savings. For the period 2015 to 2020, energy companies are obligated to ensure energy savings amounting to 12.2 PJ per year. The companies may count achieved energy savings that can be documented based on an agreement with an end user. Energy companies may provide advice in the form of energy audits and/or grants in connection with the realisation of energy saving measures by end users. The third NEEAP states that "from the enterprises' perspective, this scheme is a way of making it easier to realise energy savings and to obtain co-financing for energy investments, and thus a way to make it more economically attractive for SMEs to conduct energy audits and subsequently implement energy saving measures".

Renewable energy for production processes ('VE til proces' scheme): In connection to the replacement of fossil energy by renewable energy in production, a subsidy can be given for both energy audits and implementation of energy saving measures in SMEs. The scheme, which is directed at both non-SMEs and SMEs, is based on lov nr. 607 af 12. juni 2013 om tilskud til fremme af vedvarende energi i virksomheders processer (Act No 607 of 12 June 2013 on grants to promote renewable energy in the production processes of enterprises). The third NEEAP states that there has been a strong demand for the scheme from SMEs in agriculture. Generally this programme allows companies to request an investment aid to convert their energy consumption in production processes to renewable energy sources. This also includes grants for energy audits and energy efficiency measures. Currently the Danish Energy Agency seeks to further promote this programme. Initially this scheme was set up in June 2013 to promote renewable energy in the production processes of enterprises. Under the Act, the award of grants can also be made conditional on the beneficiary conducting an audit to demonstrate that the project concerned is energy efficient (Section 3(5)).¹⁰⁰

⁹⁸ Personal communication by Ms. Benét Hermind (Danish Energy Agency) of 23.07.2015.

⁹⁹ This is related to a certification scheme where transport companies are able to make a voluntary agreement with the Danish Transport Authority to reduce their CO₂ emissions and energy use. The schemes purpose is to encourage transport companies to use energy efficient vehicle and use its existing vehicles to a larger extent. Companies within this scheme need to ensure some reduction goals.

¹⁰⁰ Danish Energy Agency (2015): Hvad kan man søge støtte til? Online: <http://www.ens.dk/forbrug-besparelser/indsats-virksomheder/omstilling-vedvarende-energi-virksomheder/kan-soege-stoette>. Accessed: 15.09.2015.

2.1.9.2. Energy management systems

Energy management light: This version of an energy management system is especially targeted at SMEs. The system, which has been developed in a collaboration between the Danish Energy Agency and Danish Standards and is a guide especially targeted at SMEs, aims to demonstrate how to implement the energy management standard DS/EN 16001 or parts thereof.¹⁰¹

Voluntary agreements: With the law 574 of 4 May 2015 the Danish government set up a new voluntary agreement scheme that is similar to the voluntary agreement scheme mentioned above. Instead of a reimbursement of CO₂ tax, companies get a reimbursement of the PSO (public service obligation) tariff. The rules to get the reimbursement have been tightened in this new scheme, e.g. companies need to be listed in Annex 3 of the state aid guidelines. This means that the reimbursement applies to both large companies and SMEs. One requirement for companies to request this tax reimbursement is the implementation of ISO 50001, to conduct special investigations of their energy consumption and to implement all energy efficiency projects (related to the energy included in the agreement) with a simple payback time of five years or less.¹⁰²

2.1.9.3. Exchange mechanisms

The Confederation on Danish Industry (DI) organises several discussion rounds with industrial companies. For example, in the energy audit network interested companies meet and discuss how to comply with the obligations resulting from Article 8. There are a couple of meetings planned before 1 March 2016.⁹⁶ These discussions cover energy audits as one of the topics. DI also has an energy efficiency network where companies meet in order to discuss energy efficiency schemes and compare their experiences regarding the implementation of energy efficiency measures.

¹⁰¹ For more information in Danish please see:
http://www.ens.dk/sites/ens.dk/files/info/nyheder/nyhedsarkiv/energiledelse-light-vejledning-smaa-mellemstore-virksomheder/EnergiledelseVejledningLight_april2010.pdf. Accessed: 12.06.2015.

¹⁰² Danish Energy Agency (2015): New grant scheme provides government subsidies for electricity-intensive companies. Online: <http://www.ens.dk/forbrug-besparelser/indsats-virksomheder/tilskud-elintensive-virksomheder>. Accessed: 14.09.2015.

Table 20: Summary for the implementation of Article 8 in Denmark.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Primary legislation is the law No. 345 of 08.04.2014; secondary legislation 'Order in mandatory energy audits for large companies' published in 11/2015 by the Danish Energy Agency |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Globally at least 250 employees and annual turnover exceeding EUR 50m or an annual balance sheet exceeding EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Thresholds (number of employees, turnover and balance sheet total) based on national and foreign company parts; also includes subsidiaries and other enterprises where the enterprise has over 25% of the ownership or voting rights |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> No instruments in place besides the regulation relating to Article 8 |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Large enterprises satisfy obligation by certified energy or environmental management systems that include an energy audit Exemptions: Companies with an annual energy consumption of less than 100,000 kWh; construction sites; vessels with less than 5,000 tonnes gross register 10% of the total energy consumption could be exempted |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Denmark expects 500 enterprises to be covered by the regulation to conduct an energy audit, of these only a few have implemented an energy audit so far |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> A report presenting the results from the audit has to be sent to the Danish Energy Agency no later than 1 March 2016 Denmark is planning to monitor the implementation of energy audits in large companies, process is still under discussion |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Danish legislation does not define the size of the penalty for non-compliance so far; definition will be the responsibility of the Danish court |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Discussion rounds from Confederation of Danish Industry Information material (e.g. energy management light) from Danish Energy Agency |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> No special scheme which addresses the high initial costs of implementation for SMEs is available |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> 'Energy management light' from the Danish Energy Agency is a guide especially targeted at SMEs on how to implement an energy management system |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Confederation of Danish Industry (90% of members have less than 100 employees) active regarding exchange of information; Danish Energy Agency provides information material |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Danish Energy Agency published guide on energy management in SMEs, checklists for SMEs on energy reviews of existing plants and requirement specifications for setting up describing requirements for plants or in connection with tenders |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Confederation of Danish Industry, Danish Energy Agency, etc. |

2.1.9.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Denmark is provided in Table 20. The Danish Energy Agency is currently discussing a structure for a database where the results from the energy audit summary and/or report documents will be summarised.

2.1.10. Estonia

The most recent official communication on the state of implementation of Article 8 of the EED is the Estonian NEEAP of May 2014,¹⁰³ in which the Estonian Ministry of Economic Affairs and Communications (Majandus- ja Kommunikatsiooniministeerium), as the responsible body, reports on the current state of implementation.

At the current time, the process of implementing Article 8 is still ongoing and information on the current status of implementation is scarce. The corresponding framework law, tentatively designated as Organisation of Energy Management Act (OEMA; Energiamaanduse korralduse seadus, No. 13-1343),¹⁰⁴ is still under Ministerial discussion and not officially adopted yet. Its approval in the Government is likely to take place in September/October 2015. The approval will be followed by three readings in the Parliament.¹⁰⁵ Further support mechanisms will also be part of the discussion on the OEMA. Information on the implementation of energy audits is therefore not yet available in detail and no instruments are currently in place (Table 21).

Table 21: Overview of instruments in Estonia.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (•) | | (•) | | | (•) | | | |
| (•): Primary and secondary legislation not in force yet | | | | | | | | | |

2.1.10.1. Audits

Mandatory energy audit: As pointed out above, the national implementation of the mandatory energy audits for large companies is still under discussion. Therefore, only preliminary information can be provided on its interpretation:

¹⁰³ Ministry of Economic Affairs and Communications (2014): National Energy Efficiency Action Plan. Estonia's Communication to the European Commission under Article 24(2) of Directive 2012/27/EU. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_estonia.pdf. Accessed: 07.08.2015.

¹⁰⁴ Majandus- ja Kommunikatsiooniministeerium (2015): Energiamaanduse korralduse seadus (Draft Law of the OEMA). Online: <http://eelvoud.valitsus.ee/main/mount/docList/265c3e8b-028d-4168-bf10-e1210989531d#TuolSXXe>. Accessed: 07.08.2015.

¹⁰⁵ Personal communication by Mr. Madis Laaniste (Ministry of Economic Affairs and Communications) of 30.06.2015.

- **General definition:** According to preliminary information, the Estonian interpretation will classify enterprises as large if the all three minimum thresholds are exceeded, i.e. if the number of employees is higher than 250 employees, if the annual turnover is above EUR 50m and if the balance sheet total is above EUR 43m.¹⁰⁵
- **Scope:** At the current time, no exemptions from the mandatory audits are planned. There is no information yet on the size of the target group or on the status of implementation of energy audits in large companies.¹⁰⁵
- **Exemptions:** Information on alternative systems that will also be accepted for compliance with Article 8 are not yet available in detail. However, it is intended that environmental or energy management systems may serve as alternative systems if they require that an audit is carried out in accordance with minimum requirements.¹⁰⁶ According to the draft act, the deadline of 5 December 2015 for energy audits should be met, however; a specific date for the implementation of the alternative system has not been specified.¹⁰⁵
- **Deadlines:** Preliminary information indicates that the mandatory energy audits are due on the 5 December 2015 and every four years thereafter.¹⁰⁶
- **Multi-national companies:** At the current early stage of adoption, there are no decisions on how to deal with multi-national companies.¹⁰⁵
- **Multi-site companies:** As for multi-national companies, no decisions have been taken yet on multi-site companies.¹⁰⁵
- **Minimum coverage:** The minimum coverage has not yet been decided upon.¹⁰⁵
- **Penalties for non-compliance:** Penalties are still part of the discussion process.
- **Specific provisions for buildings:** Specific provisions for buildings have not yet been decided upon. According to the NEEAP, between 2011 and 2013 1,156 energy audits have been performed; (this number only covers building energy audits supported by SA KredEx (Estonian Credit and Export Guarantee Fund), which supports carrying out energy audits).¹⁰³ As KredEx is a public foundation of the government for the building sector, only apartment buildings are funded. Therefore the programme is not relevant for companies and it has now been discontinued.¹⁰⁵
- **Specific provisions for transport:** Transportation companies will be treated the same as other companies. Details still need to be decided upon.¹⁰⁵
- **Monitoring:** According to the draft act, there will be a Technical Inspectorate of Estonia as a public body authority which will monitor compliance. No final decisions on the process have been taken yet. However, there will likely be no published list of companies that have fulfilled the obligation. Furthermore, it has not yet been decided upon whether the implementation of recommended measures from the audits is mandatory.¹⁰⁵

¹⁰⁶ Eurochambres (2015): Transposition Study. Energy Audits for Europe. Assessment of the transposition of Article 8 of the Energy Efficiency Directive (2012/27/EU) into Member State legislation. Last update: 24 July 2015. Online: <http://www.eurochambres.eu/content/default.asp?PageID=1&DocID=7042>. Accessed: 07.08.2015.

While there were some funding projects dedicated to energy related-issues in SMEs a few years ago¹⁰⁵, there are currently no specific instruments in place that address energy audits in SMEs. However, according to the Income Tax Act from 2000, companies can be exempted from corporate income tax for profit that is reinvested within the company. That means only distributed profit (e.g. to owners) is subject to taxation, but not reinvested profit. This generally creates favourable conditions for investments in new and energy efficient technologies.¹⁰⁷ A new funding programme specifically dedicated to audits in SMEs is currently under preparation as part of the OEMA. It is planned that those sectors whose energy costs form a significant share of their total costs will be eligible for funding.¹⁰⁵

2.1.10.2. Energy management systems

There are various project-based activities related to the introduction of energy management systems in Estonia, but there is no regular practice so far.

2.1.10.3. Exchange mechanisms

There are no instruments aimed at setting up exchange mechanisms in a formalised manner. However, there are some activities in Estonia for providing information that may help companies to improve energy efficiency. These include the promotion of energy-related issues in companies through online portals¹⁰⁸ and an annually organised energy saving week which also addresses energy efficiency in companies to a limited extent.¹⁰⁹ Furthermore, some organisations also provide seminars and training activities related to environmental and energy management systems, e.g. the Estonian Association of Environmental Management.¹¹⁰

2.1.10.4. Further implementation plan

As the major implementation of the regulation in Estonia is still under discussion, it can be expected that further details both on mandatory audits and on funding will be published in the second half of the year. A summary of the current activities related to the implementation of Article 8 in Estonia is provided in Table 22.

¹⁰⁷ Tallinn University of Technology (2012): Energy Efficiency Policies and Measures in Estonia. Odyssee-Mure 2010. Monitoring of EU and national energy efficiency targets. Online: <http://www.odyssee-mure.eu/publications/national-reports/energy-efficiency-estonia.pdf>. Accessed: 07.08.2015.

¹⁰⁸ Eco-net, Internet portal for environmental managers. Online: <http://eco-net.ee/> Accessed: 07.08.2015.

¹⁰⁹ For further information in Estonian, see: <http://energiatark.ee> Accessed: 07.08.2015.

¹¹⁰ Association of Environmental Management. Online: <http://www.ekja.ee/> Accessed: 07.08.2015.

Table 22: Summary for the implementation of Article 8 in Estonia.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> • Organisation of Energy Management Act as main legislation not yet published |
| | How are large enterprises defined? | <ul style="list-style-type: none"> • According to preliminary information, large companies are those that exceed all three SME threshold values • Definition not in line with EU definition |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> • Still to be determined |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> • No information as main legislation not yet adopted • No other major promotion activities |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> • No final decision yet, but management systems can serve as exemption • No further exemptions planned according to current planning |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> • No information |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> • No information as main legislation not adopted yet |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> • No information as main legislation not adopted yet |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> • No dedicated programmes for SMEs are currently in place • General tax programme may provide incentives for investments in energy efficiency |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> • Support schemes planned but not in place yet as main legislation not adopted yet |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> • No information on dedicated schemes is available |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> • No major engagement at current state of implementation; activities are in a planning stage |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> • No dedicated instruments in place • Various minor information activities (web portal, seminars, etc.) |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> • No information on relevant organisations available |

2.1.11. Finland

There have been initiatives within Finland to promote and subsidise energy audits since 1992, and an energy audit programme since 1994. In 1997 a voluntary agreement scheme was introduced that also encouraged energy audits. These previous voluntary initiatives satisfied some of the requirements of Article 8 of the Energy Efficiency Directive (EED). To incorporate the obligation to conduct energy audits, new legislation (Energy Efficiency Act 1429/2014) came into force on 1 January 2015.¹¹¹ The new legislation in particular addresses additional transport energy audit aspects and introduces the mandatory requirement to comply. There are two additional Decrees addressing the detail of Article 8: one from the Ministry of Employment and Economy (Raportointiasetus 41/2015, covering scope of audits)¹¹² and one governmental (Katselmusasetus 20/2015, covering minimum criteria for on-site energy audits) that support the legislation.¹¹³

Under the previous legislation, any organisation receiving funding to support the energy audit process was required to report key aspects of the audit to a central database held by Motiva Oy (National Energy Agency). This recorded the number of audits undertaken, key recommendations and information on implementation rates. The database holds records of thousands of energy audits from hundreds of organisations and municipalities conducted over more than 20 years.¹¹⁴ This has helped to build a strong culture of energy efficiency and reporting within Finland.

The official body responsible for the implementation of the EED is the Finnish Ministry of Employment and the Economy. Specifically, the responsibility for official duties relating to energy audits of large corporations is undertaken by the Finnish Energy Authority which is also responsible for the certification of energy auditors and for quality assurance and oversight in all sectors.

Table 23 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Finland. These instruments are further detailed below.

Table 23: Overview of instruments in Finland.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---------------------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Voluntary Energy Efficiency Agreement | • | • | • | • | | | • | | |

¹¹¹ Ministry Of Justice (2014): Energy Efficiency Act 1429/2014. Online:

<http://www.finlex.fi/fi/laki/alkup/2014/20141429>. Accessed: 19.10.2015.

¹¹² Ministry Of Justice (2014): Ministry of Employment and the Economy 41/2015 Online:

<https://www.finlex.fi/fi/laki/alkup/2015/20150041>. Accessed: 19.10.2015.

¹¹³ Ministry Of Justice (2014): Government Regulation of Energy Audits 20/2015. Online:

<https://www.finlex.fi/fi/laki/ajantasa/2015/20150020>. Accessed: 19.10.2015.

¹¹⁴ Personal communication by Mr Heikki Vaisanen (Finnish Energy Authority) of 14.09.2015.

2.1.11.1. Audits

Mandatory energy audits (Energy Efficiency Act 1429/2014): Legislation was passed on 30 December 2014 to fully transpose the requirements of Article 8 of the EED. The Energy Efficiency Act 1429/2014 introduced the mandatory requirement for large enterprises to undertake energy audits or implement energy management systems and became effective from 1 January 2015. This legislation built upon the previous voluntary programmes in Finland.

- **General definition:** Finland's mandatory audit legislation (Energy Efficiency Act 1429/2014) defines a large organisation as one with 250 employees or more or a turnover in excess of EUR 50m and a balance sheet in excess of EUR 43m.¹¹⁵
- **Scope:** Other than the introduction of alternative systems (see below), no other exclusions are expected. It is anticipated that around 5,000 companies will be required to participate in the mandatory energy audits scheme.¹¹⁴
- **Exemptions:** Large enterprises that have implemented an energy management system certified to ISO 50001 or have both an ISO 14001 certified environment system and certified Finnish energy efficiency management system (ETJ+) will be exempt from mandatory energy audits.¹¹⁶ The national energy management system (ETJ+) in combination with ISO 14001 will exempt organisations from undertaking a separate audit under law 1429/2014. This EJT+ was developed in coordination with three accredited certification bodies and is quite comprehensive. The EJT+ must be certified in order to achieve the exemption and the deadline for certification is the same as Law 1429/2014 i.e. 5 December 2015. If a large enterprise is part of the Energy Efficiency Agreement Scheme and has implemented the national energy management system ETJ+, then it has fulfilled the obligation.¹¹⁴
- **Deadlines:** 5 December 2015 has been set for completion of mandatory audits or implementation of a certified energy management system.¹¹⁷ In order to support large enterprises in conducting their audits by the required deadline, any audits that comply with the legislation and have been conducted within the last 4 years can be used for the 5 December 2015 deadline.
- **Multi-national companies:** The large company definition is applied to enterprises registered in Finland and subsidiaries of overseas enterprises operating in Finland. The regulations do not apply to any operations outside of Finland.¹¹⁴ It is not possible for similar audits held outside of Finland to be used in place of similar sites inside Finland. All operations inside Finnish borders must have their own audit, or comply with the exemptions already stated.¹¹⁴
- **Multi-site companies:** The regulations include clear definition of the sampling basis for multi-site companies with similar operations. Where a company has up to 15 sites or buildings – 1 site audit must be completed; 16-100 sites or buildings – 10% of sites must be audited; 101-400 sites or buildings – the square root of the

¹¹⁵ Ministry Of Justice (2014): Art 3 Para 4 Energy Efficiency Act 1429/2014. Online: <http://www.finlex.fi/fi/laki/alkup/2014/20141429>. Accessed: 19.10.2015.

¹¹⁶ Confederation of Finnish industries EK (2014): Energy Efficiency agreements, audits and financial instruments in Finland 20.3.2014 Madrid. Online: http://iet.jrc.ec.europa.eu/energyefficiency/sites/energyefficiency/files/files/documents/events/fi_energy_efficiency_agreements_audits_and_financial_instruments_kati_ruohomaki_finland_madrid.pdf. Accessed: 20.10.2015.

¹¹⁷ Ministry Of Justice (2014): Energy Efficiency Act 1429/2014 Chapter 6 Section 33. Online: <http://www.finlex.fi/fi/laki/alkup/2014/20141429>. Accessed: 19.10.2015.

target sites; over 400 sites or buildings - 5% of total sites. This should not be confused with a minimum coverage for the audit, but defines the number of sites that must be audited as part of the overall company level assessment.¹¹⁸ The sites selected for audit should be those with the largest consumption and greatest potential savings. Sites that have under EUR 15,000 annual energy costs with under 500m² of floor space do not have to be taken into consideration when determining the number of audits required.¹¹⁹

- **Minimum coverage:** Whilst the legislation states that all energy must be covered, in practice the Energy Authority expect companies to include 95% of their total energy in their company level assessments.¹¹⁴
- **Penalties for non-compliance:** Fines will depend on the turnover and size of company. They will be set such that they are high enough to drive action, i.e. greater than the cost of undertaking audits. However, no values have been stated in the legislation and will be decided on a case by case basis next year. The Finnish Energy Authority is responsible for issuing these penalties.¹¹⁴
- **Specific provisions for buildings:** The person/organisation paying for the energy is always responsible for audits and compliance with the law.¹¹⁴
- **Specific provisions for transport:** Transport energy must be included in the scope of the mandatory audit. The audit must include transport energy for which the company pays for the fuel.¹²⁰
- **Monitoring:** All companies completing mandatory energy audits will be required to submit key information on these audits to a national database. The Finnish Energy Authority is responsible for checking that audits are completed in accordance with the Energy Efficiency Act 1429/2014, and also for inspecting a sample of audits each year to assess quality. A large enterprise must submit an audit report that is less than four years old within one month of a request made by the Finnish Energy Authority.¹¹⁴ There is no requirement for a company to implement any of the recommendations within the audit report. All audits completed under the Finnish voluntary audit energy audit programme and subsidised by public funds must be reported to a separate database held by Motiva Oy. The information that must be submitted includes details on the energy saving measures identified and the implementation of them. The audit report must be retained for 10 years and key information must be submitted to the Finnish Energy Authority within three months of the completion of the audit.¹¹⁴

Voluntary Agreements: There is a comprehensive voluntary agreement scheme in place in Finland that includes energy audits as one of its mandatory obligations. Energy Efficiency Agreements cover most sectors including industry, services and energy sector companies. The scheme has sector groups / different branches each with a different focus, which work to develop action plans with participants. The groups include: chemicals, food and drink, plastics, wood, technology and general industry, as well as commerce, hospitality, car selling and repairing and general service sectors. There are also specific groups aimed at energy intensive industries, energy production and en-

¹¹⁸ Ministry Of Justice (2014): Government Regulation of Energy Audits 20/2015 Section 3. Online: <https://www.finlex.fi/fi/laki/ajantasa/2015/20150020>. Accessed: 19.10.2015.

¹¹⁹ Ministry Of Justice (2014): Government Regulation of Energy Audits 20/2015 Section 3 Para 5. Online: <https://www.finlex.fi/fi/laki/ajantasa/2015/20150020> Accessed: 19.10.2015.

¹²⁰ Ministry Of Justice (2014): Energy Efficiency Act 1429/2014. Online: <http://www.finlex.fi/fi/laki/alkup/2014/20141429>. Accessed: 19.10.2015.

ergy services.¹¹⁶ They also cover transportation companies including those providing public transport and public bodies more widely.

Under these agreements companies receive technical support in the identification and implementation of energy efficiency measures. The voluntary agreements also support companies working towards the Finnish Energy efficiency management systems (ETJ) or ISO50001. The voluntary agreements programme runs until 2016 but there is intent for it to continue in 2017.¹¹⁶

Funding for large companies for energy audits ceased on 5 June 2014.¹¹⁴ Funding is still available for SMEs and municipalities to support them with the cost of undertaking energy audits. SMEs can secure funding of up to 50% for undertaking an energy audit. For all companies under the voluntary agreement a 20% subsidy is available for implementation of energy efficiency projects. In addition, the programme also had an annual marketing budget of EUR 25,000 to EUR 30,000 for the promotion of audits, although, in practice energy auditors did much of the marketing to companies.¹¹⁴

2.1.11.2. Energy management systems

Implementing the Finnish energy management system (ETJ) is mandatory for energy intensive companies under the voluntary agreement (i.e. those with greater than 100 GWh energy consumption on any site).¹¹⁶ Since all energy intensive companies are under the agreement, the ETJ is normal practice. The ETJ+ is a different management system to ETJ. The ETJ+ has energy audit requirements equivalent to ISO 50001. It will play a role as one alternative for ISO 14001 certified large companies as well as for those under the agreement.

A previous scheme targeting energy management systems in SMEs (ECOSTART) was abandoned due to poor take-up. The Finnish Energy Authority does not perceive a great demand for energy management systems in SMEs.¹¹⁴

2.1.11.3. Exchange mechanisms

The Finnish Energy Agency provides information and guidelines. On the voluntary side the guidelines have been published by Motiva Oy and cover 10 different on-site energy audit approaches for different sectors and types of organisation.¹¹⁴

The Energy Efficiency Advisory service targets SMEs and offers various kinds of advice, a helpdesk for questions, recommendation of auditors and procedures, but they do not help deliver audits. They can also advise on how to access available funding.¹¹⁴

2.1.11.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Finland is provided in Table 24. No further plans are currently foreseen.

Table 24: Summary for the implementation of Article 8 in Finland.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Primary legislation: Energy Efficiency Act 1429/2014 Secondary legislation: Ministerial Decree 41/2015 & Government Decree 20/2015 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Large enterprises are defined as 250 employees or more, or a turnover of EUR 50m and a balance sheet in excess of EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> This definition includes foreign subsidiaries operating in Finland, but not foreign holding companies |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Energy Audit Programme in existence since 1992 and Voluntary Agreement Scheme since 1997. Both are ongoing. |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Except from audits if ISO 50001, or if ISO 14001 and an Energy Management System (ETJ+). If a company is part of the energy efficiency agreement scheme and has an Energy Management System ETJ+ it has fulfilled the obligation |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> There is a strong culture of auditing and reporting energy in Finland due to promotion since 1992 |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Legislation requires key information from an audit to be submitted to the Finnish Energy authority within 3 months of the audit report completion; Authority checks that audits have been completed and assesses a sample of the submitted reports |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Financial penalties dependent on turnover and size of company, have to be high enough to drive action, no stated values as judged on a case by case basis |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Under the previous voluntary agreements scheme there was no distinction between SMEs and large organisations. Now the marketing budget for energy audits will target SMEs specifically, as large companies are mandated to undertake audits |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> SMEs can get 50% funding towards the cost of an audit and 20% for the energy efficiency investments through the voluntary agreements scheme |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Previously ECOSTART ran for about 4-5 years targeting SMEs but they did not take it up and scheme abandoned; EcoCompass management systems available; do not perceive any demand or need to do more |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Voluntary agreement scheme has sector groups / branches. Some sectors engage SMEs, with some large companies advising SMEs within their sector. The official advisory service, which is co-financed by the Energy Authority and the branch associations, is for all, but it is actively offered to medium sized companies. |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> There has been a budget for promoting audits since 1992 |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Motiva Oy and the Finnish Energy Authority have significant information and guidelines, e.g. 10 different audit models |

2.1.12. France

France's National Energy Efficiency Action Plan 2014 (NEEAP 2014)¹²¹ sets a target of a 20% energy efficiency improvement by 2020. The French Government adopted the National Energy Code (L.233-1 à L.233-4 du code de l'énergie par la loi n°2013-619)¹²² on 27 November 2014. This legislation has been designed specifically to ensure that Article 8 of the EED is transposed fully into national legislation, requiring large enterprises to undertake mandatory energy audits or implement certified energy management systems. The Ministry of Ecology, Sustainable Development and Energy is responsible for monitoring compliance with the regulations.

Table 25 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in France. These instruments are further detailed below.

Table 25: Overview of instruments in France.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|------------------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Energy efficiency support for SMEs | | • | • | • | | | | • | |

2.1.12.1. Audits

Mandatory energy audit: The Ministry of Ecology, Sustainable Development and Energy has established Laws 233 establishing a programme of mandatory energy audits for large enterprises in France. This new legislation was ratified by Government on 27 November 2014 and implemented through Legal Notice 2014-1393.¹²³ The regulations specifically address Article 8 of the EED and fully transposed it into national legislation. This legislation makes reference to the EED Annex VI minimum requirements for energy audits and the ISO specification series EN 16247.

- **General definition:** Under the current legislation a large organisation is defined as an enterprise with more than 250 employees, or with an annual turnover in excess of EUR 50m or an annual balance sheet of more than EUR 43m. This definition for large enterprise is not in line with the EC definition because it excludes some enterprises with exactly 250 employees which may decrease the size of the target

¹²¹ Directorate General for Energy and Climate (2014), Energy Efficiency Action Plan for France 2014. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_france.pdf. Accessed: 02.09.2015.

¹²² Energy Code (2013): Online: http://www.legifrance.gouv.fr/affichCodeArticle.do;jsessionid=E13D78F9EB63FDE14B38FBD50023BAF5.tpdjo13v_2?cidTexte=LEGITEXT000023983208&idArticle=LEGIARTI000027718476&dateTexte=20110511&categorieLien=cid. Accessed: 05.06.2015.

¹²³ Decree 2014-1393 (2014): Rules for implementation of the energy audit. Online: <http://www.legifrance.gouv.fr/affichTexte.do?cidTexte=JORFTEXT000029799204&dateTexte=&categorieLien=id>. Accessed: 06.06.2015.

group. However, the definition additionally includes enterprises with less than 250 employees in case they exceed the threshold value for one financial criterion only (see Table 73). In addition, France has defined that the large enterprise definition criteria should be applied to each individual enterprise SIREN code (a unique business identification code). Therefore, separately registered enterprises need to consider the application of the regulations to them, irrespective of the affiliation or link to other enterprises through a group structure. Participation in the mandatory auditing scheme is not dependent upon an enterprise's group structure.

- **Scope:** There are no exemptions from the requirements. The expected size of the target group of large enterprises in France was 5,000 organisations, however it is now anticipated that this will be higher with 6,000-7,000 enterprises needing to comply.¹²⁴ The reason for this increase is not clear but it may be linked to the use of individual SIREN codes.
- **Exemptions:** If an organisation has implemented an Energy Management System that has been certified to ISO 50001 by 5 December 2015 then it can use this as an alternative to undertaking mandatory energy audits. Additionally if a company has an Environmental Management System in place that is certified to ISO 14001 by 5 December 2015 then they can be considered as compliant with regulations as long as an energy audit has been undertaken as part of this system. An energy audit completed within an ISO 14001 certified system does not need to be performed by an independently approved auditor but can be completed by an appropriately knowledgeable internal or external resource.¹²⁴
- **Deadlines:** The French legislation has transposed the EED deadline of 5 December 2015 for organisations to become compliant with the energy audit regulations.
- **Multi-national and multi-site companies:** The French legislation considers only operations that are based in France. If the holding company is based outside the national territory then the regulations only cover operations registered in France with a SIREN code. If there are operations of a French national organisation overseas then the legislation does not require audits of these operations.¹²⁴ For multi-site companies, all sites based in France are subject to the regulations. There is no lower limit on the size of site or its energy use. The French regulations allow for a sampling approach to be applied to sites that are similar. The sample size should be the square root (rounded to the nearest whole number) of the total number of sites of a given type.
- **Minimum coverage:** Mandatory energy audits must consider the energy consumption, measured through energy expenditure, of an enterprise's activities, including energy consumed in industrial processes, buildings and transportation. Audits undertaken during, or prior to, 2015 that meet the legislative requirements must cover 65% of total energy consumption. Thereafter, 80% of total energy consumption must be included within the audit.¹²⁴
- **Penalties for non-compliance:** Penalties for non-compliance vary on a case-by-case basis, but shall not exceed 2% of the company's revenues (or 4% of revenues in the case of repeated non-compliance).
- **Specific provisions for buildings:** There are no additional specific provisions for buildings. As the energy consumption to be included within the scope of an audit is defined by the energy expenditure of an enterprise this avoids any ambiguity over

¹²⁴ Personal communication by Laurent Cadiou, Chargé de mission - DGEC/SCEE/SD5/5CD of 22.06.2015.

landlord and tenant situations. Buildings audits must be delivered to NF EN 16247-2 standard.

- **Specific provisions for transport:** As with buildings, there are no additional specific provisions for transport audits. The energy consumption to be included is defined by expenditure and the audit must be completed to the NF EN 16247-4 standard. However, it is noted that energy use should be broken down by the characteristics of the fleet, segmented by model and type of vehicle.
- **Monitoring:** All enterprises must submit notification of compliance to the relevant regional prefect by 5 December 2015 (this may be done by post or electronically, depending on the region). The submission must include the justification of choice of scope (e.g. exclusions, representative sampling methods) and the approved Auditor's certification of company's compliance (Note: sign-off from a company director is not required). Submission of a synthesis report provides regulators with general information about the company and its buildings/activities, a description of the audited activities, total energy use and cost both broken down by energy type. The report should also provide a full prioritised list of opportunities to improve energy efficiency, their associated costs, potential energy savings and payback classified by one of three categories: <1 year, 1-4 years, >4 years. Companies should maintain the above documents for eight years.

Energy efficiency support for SMEs: SMEs can apply for funding of up to 70% (maximum EUR 50,000) towards the cost of undertaking an energy audit. Funding is provided by the French energy and environment agency ADEME and additional funds of up to EUR 100,000 can be provided to support the implementation of energy efficiency measures. This funding is dependent upon the company making the recommendations complying with a set standard. Confédération Général des Petites et Moyennes Entreprises (CGPME), which represents SMEs in France, has established a mechanism to encourage SMEs to undertake energy audits through subsidising the costs of audits or implementing energy management systems.¹²⁵

2.1.12.2. Energy management systems

There is no support for implementation of Energy Management Systems in large enterprises; however funding is available to SMEs for the development and implementation of such systems. The funding is available through ADEME and covers up to 70% of the cost. This is the same fund as used to support the implementation of energy efficiency measures detailed above.

2.1.12.3. Exchange mechanisms

There are various information and awareness networks in operation across France. These include local/regional bodies and sector based groups that focus on energy efficiency generally. Most have addressed the new regulations and the benefits of energy audits and energy management systems. Additionally, ADEME supports businesses by working with Chambers of Commerce and through local authorities to raise awareness and exchange energy management information.

¹²⁵ ADEME (2011): Financial assistance and incentives for SMEs Online: <http://www.ademe.fr/aides-incitations-financieres-pme-environnement-energie>. Accessed: 05.06.2015.

2.1.12.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in France is provided in Table 26.

Table 26: Summary for the implementation of Article 8 in France.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> France implemented Article 8 through its national energy code (L.233-1 à L.233-4 du code de l'énergie par la loi n°2013-619); a decree was issued on 27 November 2014 which laid out the specifics of the implementation |
| | How are large enterprises defined? | <ul style="list-style-type: none"> An enterprise with more than 250 employees, or with an annual turnover of more than EUR 50m or an annual balance sheet of more than EUR 43m. Criteria are applied to each enterprise by separate SIREN code |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> French legislation only considers operations that are based in France to be required to conduct mandatory energy audits |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Companies have proven track records in delivering energy saving in France mainly through existing measures. The legislation acts to supplement existing schemes to drive energy efficiency in a wider number of enterprises; no additional promotion is evident |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> No exemptions granted for organisations that meet the above criteria |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No information on current levels of energy audits; there is no registry of them |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> The Ministry of Ecology, Sustainable Development and Energy is the responsible body for monitoring compliance Local authorities have been delegated to monitor compliance |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Penalties for non-compliance vary on a case-by-case basis, but shall not exceed 2% of the company's revenues (or 4% of revenues in case of repeated non-compliance) |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> CGPME which represents SMEs in France has established a mechanism to encourage SMEs to undertake energy audits through subsidising the costs of audits or implementing energy management systems |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> The French Energy and environment agency ADEME provides financial support to SMEs that decide to make an energy audit. Additional funding is also available for helping implementing the recommended energy efficiency actions and investments (the help covers up to 70% of the cost for small companies, and the maximum eligible budget of the action cannot exceed EUR 100k) |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> CGPME which represents SMEs in France has established a mechanism to encourage SMEs to undertake energy audits through subsidising the costs of audits or implementing energy management systems |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Engagement has been through CGPME |

| | | |
|----------|---|--|
| Exchange | What specifically has been done to raise awareness? | Communication through Chambers of Commerce and local authorities with businesses |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Businesses, local authorities and Chambers of Commerce all work to share information on energy management through regional and sector based groups |

2.1.13. Germany

The German government is implementing the EED under the guidance of the Federal Ministry for Economic Affairs and Energy (BMWi).¹²⁶ To comply with Article 8 of the EED, the German Parliament adopted the amendment to the Act on Energy Services and Energy Efficiency Measures (EDL-G) in early March 2015.¹²⁷ In Germany's energy transition, energy efficiency is considered as the twin pillar to the expansion of renewable energies and is broadly supported by different governmental and non-governmental organisations¹²⁸ and industrial associations.¹²⁹ Thus, the German government has implemented a bundle of policy instruments to improve progress in energy efficiency, especially in the industry sector. With regard to recent developments in the national field of energy efficiency policy, the German government published the National Action Plan Energy Efficiency (NAPE) in December 2014 (not to be confused with the NEEAP submitted to the European Commission). The aim of the NAPE is to create energy savings in industry, commerce and private households by focusing on providing support for innovative ways of saving energy as well as business models for new products and solutions. The measures especially focus on the industry sector and include 500 Energy Efficiency Networks, mandatory audits for large companies, support for waste heat utilisation, funding schemes for energy efficiency measures, and funding schemes for energy audits.¹³⁰ In addition to these measures, the BAFA fund for cross-cutting technologies also funds the creation of a company-specific energy-saving concept by an external energy consultant, which consists of an energy review that mainly focuses on the assessment of energy efficiency measures to be imple-

¹²⁶ Federal Ministry for Economic Affairs and Energy (2014): Third National Energy Efficiency Action Plan (NEEAP) 2014 for the Federal Republic of Germany. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_germany.pdf. Accessed: 06.08.2015.

¹²⁷ The amendment has been published in the Federal Gazette on 21 April 2015 and can be retrieved here: http://www.bgbl.de/banzxaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl115s0578.pdf. Accessed: 11.09.2015. A consolidated version of the statute can be retrieved here: Bundesministerium der Justiz und für Verbraucherschutz (2015): Gesetz über Energiedienstleistungen und andere Energieeffizienzmaßnahmen (EDL-G). Online: <http://www.gesetze-im-internet.de/edl-g/>. Accessed: 06.08.2015.

¹²⁸ These are e.g. the German DENEFF or dena. For further information regarding institutions involved in the German energy transition see (in German language): Federal Foreign Office: Who is who der Energiewende in Deutschland. Ansprechpartner in Politik, Wirtschaft und Gesellschaft. Online: <http://www.auswaertiges-amt.de/cae/servlet/contentblob/710430/publicationFile/207269/EnergiewendeWhoisWho.pdf>. Accessed: 31.08.2015.

¹²⁹ These are e.g.: Confederation of German Industry (BDI), Federal German Cement Industry Association and the German Building Materials Association (BBS), German Chamber of Commerce and Industry (DIHK), Central Association of the Electrical Engineering and Electronics Industry (ZVEI), German Association of Machine and Plant Builders (VDMA), German Confederation of Skilled Crafts (ZDH), German Retail Association (HDE), Federal Association of the German Energy and Water Industries (BDEW), Association of the Energy and Power Industry (VIK), Association of Municipal Companies (VKU), German Association of Energy Consumers (VEA), German Petroleum Industry Association (MWV), Federation of German Steel Industry (WV Stahl), Federation of German Food and Drink Industries (BVE), Federal Association of the German Glass Industry (BV Glas), German Chemical Industry Association (VCI), German Pulp and Paper Association (VDP), Non-Ferrous Metals Association (WV Metalle)

¹³⁰ BMWi (Bundesministerium für Wirtschaft und Technologie) (2014b): A good bit of work. Making more out of energy. National Action Plan on Energy Efficiency. Online: <http://www.bmw.de/EN/Service/publications,did=701906.html>. Accessed: 12.03.2015.

mented.¹³¹ Furthermore, the German Promotional Bank KfW offers companies low interest loans for the implementation of energy efficiency measures within the 'KfW Energy Efficiency Programme Production and Processes'.¹³²

In Germany the majority of instruments that aim to promote the implementation of energy audits and energy management systems in industrial companies are subsidies and incentives as well as information instruments. The only regulatory instrument currently in force is the mandatory implementation of energy audits in large companies. Table 27 provides an overview of instruments related to energy audits, energy management systems and exchange mechanisms currently implemented in Germany. These instruments are further detailed below.

Table 27: Overview of instruments in Germany.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|----------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| SME Energy Consulting Programme | | • | • | | | | | • | |
| Eco tax cap for manufacturing industry | • | • | • ¹ | • | | | | • | |
| Special equalization scheme | • | • | • ² | • | | | | • | |
| BAFA support programme for energy management systems | • | • | | • | | | | • | |
| BAFA support programme for cross-cutting technologies | • | • | • | | | | | • | |
| Energy efficiency networks | • | • | • | | • | | | | • |

¹ only refers to SMEs

² only refers to companies with an electricity consumption of less than 5 GWh

2.1.13.1. Energy audits

Mandatory energy audit (Mandatory Audits for large companies according to the Act on Energy Services and Energy Efficiency Measures - Gesetz zur Teilumsetzung der Energieeffizienzrichtlinie und zur Verschiebung des Außerkräfttretens des § 47g Absatz 2 des Gesetzes gegen Wettbewerbsbeschränkungen (EDL-G)): To comply with Article 8 of the EED, the German Parliament adopted an amendment to the Act on Energy Services and Energy Efficiency Measures (EDL-G).¹²⁷ To support companies interpreting this law, the Federal Office of Economics and Export Control (BAFA, German:

¹³¹ BAFA (2015): Systemische Optimierung. Merkblatt für Anträge nach 3.1.2 der Richtlinie für Investitionszuschüsse zum Einsatz hocheffizienter Querschnittstechnologien im Mittelstand. Online: http://www.bafa.de/bafa/de/energie/querschnittstechnologien/merkblaetter/systemische_optimierung.pdf. Accessed: 01.09.2015.

¹³² KfW (2015): Merkblatt - KfW-Energieeffizienzprogramm - Produktionsanlagen/-prozesse. Online: https://www.kfw.de/PDF/Download-Center/F%C3%B6rderprogramm-%28Inlandsf%C3%B6rderung%29/PDF-Dokumente/6000003416_M_292_293_EEP_Produktion.pdf. Accessed: 31.08.2015.

Bundesamt für Wirtschaft und Ausfuhrkontrolle) published an interpretation guideline in July 2015.¹³³ The following description highlights the particulars of the transposition of Article 8 in Germany. Besides this guideline BMWi has also set up a short online-based “test scheme for classification as small or medium sized enterprises” to support companies in assessing their SME status.¹³⁴

- **General definition:** In terms of the definition for large enterprises, the amended Act on Energy Services and Energy Efficiency Measures explicitly refers in Article 1 No. 4 EDL-G to the European Commission definition of an SME as it is referred to in Article 2 No. 26 of the EED. Accordingly, any company that is not an SME is considered as a large enterprise. Companies acquire or lose the SME status only when they are within the thresholds for two consecutive financial years.¹⁸ A company is defined as a non-SME if it has (a) 250 or more employees or (b) less than 250 employees, but more than EUR 50m turnover and EUR 43m balance sheet. In addition to the thresholds, the respective entity usually has to undertake an economic activity to fall under the regulation. Thus, the assessment of whether an entity is obliged to conduct an energy audit does not depend on the (private or public) legal nature, but on its tasks or activities. Of major importance is the extent to which an economic activity is carried out. In particular, public bodies and entities in which the public sector is involved may be difficult to demarcate regarding their characteristics in terms of economic activity. Further details regarding the coverage of this law are given below (see section ‘Exemptions’).¹³³
- **Scope:** All municipalities and institutions with predominantly statutory activities can be exempted from the regulation. However, there are a few areas of economic activity remaining that are also excluded from the scope of the regulation due to their sovereign character. Examples of sovereign non-economic activities and other tasks excluded from the obligation to conduct an energy audit are activities in the fields of security, police and judiciary; public water supply, sewerage or waste disposal (as far as these tasks are not performed by private third parties); tasks of government-funded educational institutions (especially schools and kindergartens), etc.¹³³ In Germany approximately 50,000 companies are covered by the regulation.¹³⁵ As energy audits are currently not recorded centrally, the Federal Government gives an estimation of the number of energy audits conducted in the third NEEAP, which is based on available information and only refers to an approximate range. Based on this information the Federal Government funded approximately 3,100 detailed energy consultations in the energy consulting programme targeted at medium-sized enterprises (see also below ‘SME Energy Consulting Programme’) during the time period from 2011 to 2013.
- **Exemptions:** Companies are exempted from the energy audit obligation if they have an ISO 50001 certified energy management system or an environmental management system in line with EMAS in place (Article 8 (3) EDL-G). Even though it is not an exemption, it should be noted that obliged companies may also conduct the mandatory energy audit as part of their participation in an energy efficiency

¹³³ BAFA (2015): Merkblatt für Energieaudits nach den gesetzlichen Bestimmungen der §§ 8 ff. EDL-G. Online: http://www.bafa.de/bafa/de/energie/energie_audit/publikationen/merkblatt_energieaudits.pdf. Accessed: 06.08.2015.

¹³⁴ BMWi (2015): KMU Schnelltest. Prüfschema für die Einstufung als kleines oder mittleres Unternehmen (KMU). Online: <http://www.zim-bmw.de/koooperationsprojekte/old/kmu-schnelltest-1/kmu-schnelltest%2001>. Accessed: 11.09.2015.

¹³⁵ Deutscher Bundestag (2014): Gesetzentwurf der Bundesregierung. Entwurf eines Gesetzes zur Teilmensetzung der Energieeffizienzrichtlinie und zur Verschiebung des Außerkrafttretens des § 47g Absatz 2 des Gesetzes gegen Wettbewerbsbeschränkungen. BT-Drucksache 18/3373. Online: <http://dip21.bundestag.de/dip21/btd/18/033/1803373.pdf>. Accessed: 11.09.2015.

network (see 'energy efficiency networks' below). In these networks an energy audit is always required during the start-up phase.¹³³

- **Deadlines:** The general deadline for carrying out an energy audit is 5 December 2015. Audits carried out between 4 December 2012 and this deadline can be taken into account to comply with the obligation. Companies that decided to implement an energy or environmental management system instead of an energy audit will only have to declare this intention on request and have to have started with the implementation by the above mentioned deadline. This is based on the reasoning that the implementation and certification of an energy or environmental management system takes longer than an audit and may not be completed by 5 December 2015. Thus, the respective company only has to prove the start of the implementation of an energy or environmental management system and the fulfilment of certain parts of ISO 50001 or EMAS in the first monitoring and review cycle by the German BAFA (see also section monitoring below), which will last until 31 December 2016. However, companies must implement the alternative system in its entirety by the end of 2016.
- **Multi-national companies:** The calculation of the thresholds that form the basis of the definition of an SME is based on all sites of the company group, including subsidiary companies abroad. However, only sites located in Germany are obliged to conduct the energy audit.¹³³
- **Multi-site companies:** As stated above all sites of the company have to be considered within the calculation of the thresholds for the definition of a non-SME company. This also refers to company parts where the company holds a share of more than 25% of the assets. Independent companies, where the parent company holds less than 25% of the capital or voting rights, do not have to be considered within the calculation.¹³³
- **Minimum coverage:** In general, the energy audit has to cover a minimum share of 90% of the energy consumption of a company. For companies that have a number of similar sites, the energy audit has to be proportionate and representative. Therefore a so-called multi-site process in which clusters of locations are identified can be applied. In this case, the requirement is fulfilled if energy audits are carried out for a representative number of sites if the remaining sites are similar with regard to characteristics such as their energy consumption profile, their number of employees, etc. These sites are compiled in one cluster. An energy audit has then to be carried out for the number of sites which is equal to the square root of the total number of sites in the cluster, rounded to the upper whole number. In consequence, not every site has to conduct an energy audit.¹³³ The definition and calculation of clusters is not further defined, but as the multi-site approach stems from the certification of energy management systems, it can be assumed that clusters can be defined and calculated as for the certification of such systems.
- **Penalties for non-compliance:** A failure to comply with the energy audit obligation constitutes an offence (Ordnungswidrigkeit) for which BAFA can levy a fine of up to EUR 50,000 (Article 12 EDL-G).¹³³
- **Specific provisions for buildings:** Regarding buildings, the energy consumption must be taken into account in the energy audit of the company that is operationally using the building (or part of a building complex). Independent of the ownership structure this will usually be the respective user or tenant who is able to directly influence the energy consumption. If the building is rented and the company does not have an influence on the energy consumption, the building can be ex-

cluded from the energy audit. This is also based on the fact that the building's owner is obliged to provide a buildings energy certificate in line with the Energy Saving Ordinance (EnEV), which reflects the energy consumption and energy saving potentials comparable to an energy audit.¹³³

- **Specific provisions for transport:** Transportation (road, rail, shipping, flights) has to be generally considered in the energy audit. Thereof, only the energy consumption resulting from transportation activities directly connected to the purpose of business should be considered within the audit. Cross-border transportation has to be incorporated as well, if it begins or ends in Germany.¹³³
- **Monitoring:** In general, energy audits are currently not recorded centrally in Germany.¹²⁶ There is no obligation for the company to proactively inform BAFA of the implementation of an energy audit. According to Article 8c (1) EDL-G BAFA is obliged to carry out spot checks for the implementation of energy audits in large companies. Therefore BAFA will contact some companies on a random basis with a request to submit documents such as their energy audit report or parts of the report.¹³³

SME Energy Consulting Programme (Energieberatung Mittelstand): This programme was launched by BMWi in 2008. It was initially administered by KfW, the German Promotional Bank and was transferred to BAFA at the beginning of 2015. The programme aims to help companies to overcome deficits in know-how and other obstacles concerning energy usage. It offers financial support for screening and detailed energy audits in SMEs by qualified and independent consultants. Companies with annual energy costs above EUR 10,000 can get funding of 80% of the eligible costs (up to EUR 8,000) and companies with annual energy costs of up to EUR 10,000 can obtain funding of 80% of the eligible costs (up to EUR 800). The energy consultation within this programme meets the requirements for an energy audit as defined in Article 8(1) in conjunction with Annex VI of the EED.¹³⁶ Until the end of 2014, support was provided to SMEs with annual energy costs exceeding EUR 5,000. The funding model has been altered since then and SMEs with lower energy annual costs are now also eligible to receive support. According to an evaluation from 2012, the programme provides support to roughly 300 companies per month. On average, around 5.3 energy efficiency measures were recommended per company with an adoption rate of 43% excluding those measures already planned.¹³⁷ A more recent evaluation of the programme underlines the positive effect on the implementation of energy efficiency measures in the wake of the audits.^{138,139}

2.1.13.2. Energy management systems

Eco tax cap for manufacturing industry (Spitzenausgleich, Electricity tax law § 10 StromStG and Energy tax law § 55 EnergieStG in combination with the regulation Spitzenausgleich-Effizienzsystemverordnung (SpaEfV)): Several mechanisms to re-

¹³⁶ Federal Ministry for Economic Affairs and Energy (2014): Directive on the promotion of the SME Energy Consulting Program. Online: <http://www.bmwi.de/BMWi/Redaktion/PDF/P-R/richtlinie-ueber-die-foerderung-von-energieberatungen-im-mittelstand,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf>. Accessed: 22.04.2015.

¹³⁷ Fleiter, T.; Gruber, E.; Eichhammer, W.; Worrell, E. (2012): The German energy audit programme for firms - a cost-effective way to improve energy efficiency? *Energy Efficiency*, 5 (4), pp. 447-469.

¹³⁸ Mai, M. et al.: Evaluation des Förderprogramms „Energieberatung im Mittelstand“. Institut für Ressourceneffizienz und Energiestrategien GmbH/Fraunhofer Institut für System und Innovationsforschung ISI, Karlsruhe. Projekt-Nr. 56/13. For the German Federal Ministry for Economic Affairs and Energy.

¹³⁹ Schleich, J. et al. (2015): Effect of Energy Audits on the Adoption of Energy-Efficiency Measures by Small Companies. In: Proceedings of the ecee 2015 Summer Study 2015, pp. 1827-1836.

duce electricity tax burdens on industrial companies exist in Germany. Tax caps for electricity and energy for the manufacturing sectors were introduced in 1999. Companies that are granted tax caps have to provide proof that an energy management system will have been introduced by the end of 2015. Small and medium-sized companies are allowed to implement an alternative system (e.g. an audit in line with DIN EN 16247-1).¹⁴⁰ This so-called surplus settlement is available upon request to companies from the manufacturing sector and enables the redemption of up to 90% of electricity and/or energy taxes paid. To gain this reduction the energy intensity has to be continuously reduced by the manufacturing industry as a whole. The legal targets for this energy intensity are 1.3% annually for the period from 2013 to 2015 and 1.35% for 2016. The figures for the following years up to 2022 will be laid down in regulations during an evaluation in 2017 resulting from the experience gained in the meantime. Based on a third-party monitoring report, the German government will determine whether the industries that have benefitted from the tax caps have met the necessary legal requirements for reducing energy intensity. If the targets are not achieved by the manufacturing industry this energy and electricity tax exemption could be cancelled by the German government.¹⁴¹ The Federal Government estimates in its third NEEAP that approximately 2,100 undertakings implemented an energy management system in line with ISO 50001 for the exemption period in 2014.¹²⁶

Special equalisation scheme (Besondere Ausgleichsregelung § 64 (1) No. 3 EEG 2014): The special equalisation scheme in the Renewable Energy Sources Act (EEG) provides for a reduction of the renewables surcharge (EEG surcharge, also called EEG reallocation charge) for energy-intensive companies. For electricity-intensive companies and rail operators, the EEG surcharge can be limited by BAFA upon request. Beneficiaries pay the full EEG surcharge for the first gigawatt hour and then 15% of the EEG surcharge for every kilowatt hour of electricity they consume above this. This burden is limited to a maximum of 4% of the respective enterprise's gross value added or, in the case of enterprises with an electricity-cost intensity of 20% or more, a maximum of 0.5% (cap/super-cap in the EU's Guidelines on State aid for environmental protection and energy). As a prerequisite to obtaining the reduction of the renewables surcharge, applicants have to operate a certified energy or environmental management system (in line with DIN EN ISO 50001, formerly 16001 or EMAS); companies with an electricity consumption of less than 5 GWh can operate alternative systems (e.g. according to DIN EN 16247-1) that improve energy efficiency.¹⁴² In its third NEEAP the Federal Government reported the implementation of 1,135 ISO 50001 energy management systems for the 2014 exemption period. Of these, 1,069 certifications were legally required by the special equalisation scheme.¹²⁶

BAFA fund for energy management systems: Through a funding programme BMWi supports the certification of energy management systems for companies. The funding programme is administered and operated by BAFA. Within this programme there are the following types of funding available:

¹⁴⁰ BMWi (2013): Verordnung über Systeme zur Verbesserung der Energieeffizienz im Zusammenhang mit der Entlastung von der Energie- und der Stromsteuer in Sonderfällen (Spitzenausgleich-Effizienzsystemverordnung – SpaEfV). Online: <http://www.bmwi.de/BMWi/Redaktion/PDF/Gesetz/spitzenausgleich-effizienzsystemverordnung,property=pdf,bereich=bmwi2012,sprache=de,rwb=true.pdf>. Accessed: 31.08.2015.

¹⁴¹ BMWi (2012): Gesetz zur Änderung des Energie- und Stromsteuergesetzes sowie zur Änderung des Luftverkehrsteuergesetzes. <http://dipbt.bundestag.de/extrakt/ba/WP17/467/46719.html>. Accessed: 31.08.2015.

¹⁴² Bundesministeriums der Justiz und für Verbraucherschutz (2014): Gesetz für den Ausbau erneuerbarer Energien (Erneuerbare-Energien-Gesetz - EEG 2014). Online: http://www.gesetze-im-internet.de/bundesrecht/eeg_2014/gesamt.pdf. Accessed: 03.09.2015.

- *Funding for the initial certification of an energy management system:* For the initial certification of an ISO 50001 energy management system, companies could get funding for 80% of qualifying expenses up to EUR 6,000. Other opportunities to receive funding include an initial certification for the request of tax reliefs within the special equalisation scheme, with maximum funding corresponding to 80% of the costs of eligible expenditures¹⁴³, limited to EUR 1,500. To apply for this funding the company is obliged to implement an alternative system by the special equalisation scheme. Additionally, energy costs of the company must be below EUR 200,000 on average during the last three years. (Note: Companies obliged to implement an energy management system - not an alternative system - according to the special equalisation scheme are not allowed to receive funding).
- *Funding for the purchase of metering technology and/or software for an energy management system:* Companies may request funding for the purchase of metering technology for energy management systems. Therefore, they could get funding up to a maximum of 20% of the cost (up to EUR 8,000). They can also receive funding for a one-off purchase of software for energy management systems up to a maximum of 20% of the costs (up to EUR 4,000).
- *Funding for external energy consultation:* For an external energy consultation, 60% of the consultant costs can be funded (up to EUR 3,000).
- *Funding for training costs of employees:* Energy manager training costs are also eligible costs that can be funded by 30% (up to EUR 1,000). Additionally, companies may request funding for an external consultation up to a maximum of 60% of the eligible consulting costs (up to EUR 3,000).

Generally, the total sum per company is limited to EUR 20,000 in 36 months. The following groups of companies may not apply to this scheme:

- 1) Companies that are obliged to implement an energy management system within the special equalisation scheme are not eligible to request this funding. Only companies that need to implement an alternative system under the special equalisation scheme are exceptionally eligible to request funding.
- 2) Companies that request a tax relief under the 'Eco tax cap for manufacturing industry' (see above) are not eligible to apply for funding. Only small and medium-sized enterprises, if they meet the EC's SME definition, and that also request this tax relief, are allowed to submit an application.¹⁴⁴

2.1.13.3. Exchange mechanisms

Energy efficiency networks: Energy efficiency networks originating from Switzerland (see 2.2.5.3) were initiated in 2008 in Germany with funds from the German Government. The main goal was to implement 30 local Learning Energy Efficiency Networks (LEEN). In these networks, 10 to 15 regionally based companies with energy costs above EUR 500,000 from different sectors come together aiming to enhance their energy efficiency performance. The companies set non-binding energy efficiency

¹⁴³ Eligible expenditures must be directly linked to the implemented measure and have to be necessary and appropriate. Not eligible expenditures are a) costs for personnel, b) operating costs, c) taxes, levies and fees, d) personal contribution (cf. chapter 3.4 of the Directive for the promotion of energy management systems).

¹⁴⁴ Federal Ministry for Economic Affairs and Energy (2015): Energiemanagementsysteme Merkblatt als Hilfestellung für Anträge nach der Richtlinie für die Förderung von Energiemanagementsystemen (ab 1. Mai 2015). Online: http://www.bafa.de/bafa/de/energie/energiemanagementsysteme/publikationen/merkblatt_energiemanagementsysteme.pdf. Accessed: 31.08.2015.

goals; they conduct energy audits, monitor their energy performance on a regular basis and regularly share their experiences with regard to energy efficiency improvements. For companies with energy costs below EUR 500,000 there is currently a pilot research project referred to as “Mari:e – Mach’s richtig: Energieeffizient!” (Do it right: Be energy-efficient!). The Mari:e project is also based on the LEEN network management system, with a modified approach for smaller companies.¹⁴⁵ This structured approach, with a standardised process consisting of an energy audit and monitoring, helps companies to reduce transaction costs, to overcome barriers to energy efficiency, to raise the priority of energy efficiency aspects within the company, particularly in cross cutting technologies and, hence, to reduce their energy costs.¹⁴⁶ After the successful implementation of the first pilot networks in the period from 2009 to 2014, a follow-up activity for creating additional LEEN networks is currently ongoing.¹⁴⁷

In addition to the networks implemented during the research projects, the Federal Government has set an objective to implement 500 additional Energy Efficiency Networks in Germany by 2020. As a result, BMWi and the Federal Ministry for the Environment (BMUB) have signed an agreement with business associations and organisations for the networks to be established by 2020. Simultaneously, an Initiative for Energy Efficiency Networks that aims to promote the idea has been founded.¹⁴⁸ Recently, this initiative published a guideline formalising the requirements for undertaking an Energy Efficiency Network.¹⁴⁹

2.1.13.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Germany is provided in Table 28. The German government published the German NAPE in December 2014. The process of implementing the NAPE is still ongoing; the German BMWi is currently preparing the implementation of the proposed measures in this action plan together with several scientific and public institutions.

¹⁴⁵ For further information in German see: <http://www.marie.streks.org>. Accessed: 31.08.2015.

¹⁴⁶ Jochem, E., Gruber, E. (2007): Local learning networks on energy efficiency in industry – Successful initiative in Germany. *Applied energy* 2007 (84), S. 806-816.

¹⁴⁷ For further information in German see: <http://www.energie-effizienz-netzwerke.de>. Accessed: 31.08.2015.

¹⁴⁸ BMWi (Bundesministerium für Wirtschaft und Energie), BMUB (Bundesministerium für Umwelt, Bau, Naturschutz und Reaktorsicherheit) (2014): Initiative Energieeffizienz-Netzwerke Vereinbarung zwischen der Regierung der Bundesrepublik Deutschland und Verbänden und Organisationen der deutschen Wirtschaft über die Einführung von Energieeffizienz-Netzwerken. Online: <http://www.bmw.de/BMWi/Redaktion/PDF/V/vereinbarung-initiative-energieeffizienz-netzwerke,property=pdf,bereich=bmw2012,sprache=de,rwb=true.pdf>. Accessed: 12.03.2015.

¹⁴⁹ Initiative for Energy Efficiency Networks (2015): Praxis-Leitfaden zur Initiative Energieeffizienz-Netzwerke. Online: http://bdi.eu/download_content/EnergieUndRohstoffe/Initiative_Energieeffizienz-Netzwerke.pdf. Accessed: 31.08.2015.

Table 28: Summary for the implementation of Article 8 in Germany.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Act on Energy Services and Energy Efficiency Measures Interpretation guideline published by BAFA |
| | How are large enterprises defined? | <ul style="list-style-type: none"> The national legislation explicitly refers in Article 1 No. 4 EDL-G to the definition of the European Commission as referred to in Art. 2 No. 26 of the EED |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Calculation of thresholds should be based on all company sites, including subsidiaries abroad, implementation of energy audits only mandatory for sites located in Germany |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> (subsidized) low-interest loans from KfW (German Development Bank) BAFA funding for energy management systems |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Compliance if audit carried out between 4 December 2012 and 5 December 2015 Exemption if ISO 50001 certified energy management system or environmental management system according to EMAS implemented |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Approx. 3,100 detailed energy consultations targeted at medium-sized enterprises (energy consulting programme, 2011-2013); 3,240 companies and organisations certified under ISO 50001 by 03/2014 |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> No obligation for companies to proactively inform BAFA about the implementation of a mandatory energy audit BAFA is obliged to carry out spot checks in terms of the implementation of energy audits in large companies |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Offence will be sanctioned by BAFA with a fine of up to EUR 50,000 |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Interconnection of different instruments to foster implementation of audits, e.g. by linking tax reductions/ exemptions to audits and/or energy efficiency improvements, additionally funding available |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> SME Energy Consulting Programme which offers financial and informational support for energy audits in SMEs |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> BAFA programme open both for large companies and SMEs Energy efficiency networks and tools (Mod.EEM) provide technical assistance and information |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Agreement between government and industrial associations about implementation of 500 energy efficiency networks until 2020; several discussion platforms (e.g. the energy efficiency platform for the implementation of the national energy efficiency action plan) |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Promotion of Energy Efficiency Networks Scheme |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Various German industrial associations (e.g. BDI, BBS, DIHK, ZVEI, VDMA, ZDH, HDE, BDEW, VIK, VKU, VEA, WV Stahl, VBE, VB Glas, VCI, VDP, WV Metalle); other governmental and non-governmental organisations addressing energy efficiency in industry (e.g. German DENEFF, dena) |

2.1.14. Greece

The EED has been formally transposed into the Greek legislative framework with Law 4342/2015 (143 A).¹⁵⁰

The Directorate for Energy Policies and Energy Efficiency at the Ministry of Environment and Energy is mainly responsible for the implementation and administration of the legislation regarding the EED, in cooperation with other relevant authorities.

Since 2010 Greek Law 3855/2010¹⁵¹ has set out Greece's national targets for energy reduction (9% of the average annual final value of energy consumption) in accordance with the Energy Service Directive (ESD). The law also provides a framework to promote energy efficiency measures, and sets the institutional framework for carrying out energy audits. According to Article 14 of this law, energy audits are designed to identify potential energy efficiency improvement measures and are applied independently to all final consumers, including domestic, commercial customers and small industrial customers. Energy audits should be conducted in accordance with the provisions of a Joint Ministerial Decision (JMD)¹⁵² in order to guarantee effective and high quality services. This JMD defines the procedures, requirements and guidelines of energy inspection on the premises and spaces of an industrial or building complex. Energy audits under schemes based on voluntary agreements between interested bodies and public organisations are carried out in accordance with the above requirements.

According to the December 2014 NEEAP for Greece,¹⁵³ the framework that will be developed for energy auditing in accordance with the requirements of Article 8 of the EED will be based on either ISO 50002 or EN 16247, and will take into account the existing procedures defined by the JMD (Table 29).

Table 29: Overview of instruments in Greece.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit ¹ | • | | • | | | • | | | |
| ¹ secondary legislation is not in force yet | | | | | | | | | |

¹⁵⁰ Law 4342/2015 (143 A) (2015) Online: http://www.et.gr/idoocs-nph/search/pdfViewerForm.html?args=5C7QrtC22wE4q6ggiv8WTXdtvSoClrL86BYA0d1yFht5MXD0LzQTLWPU9yLzB8V68knBzLCmTXKaO6fpVZ6Lx3UnKl3nP8NxdnJ5r9cmWyJWelDvWS_18kAEhATUkJb0x1LIIdQ163nV9K--td6SIuQpuAYsfWnZnOjEVMl0sgT4NCgtIEtCJDePk6QIHe_RU. Accessed: 23.02.16.

¹⁵¹ The Greek Republic (2010): Measures to improve energy efficiency in end-use, energy services and other provisions (Government Gazette No 95, Series I, 23-06-2010).

¹⁵² The Greek Republic, Joint Ministerial Decision (1999): "Procedures, requirements and guidelines for conducting energy audits", D6 / B / Fin. 11038/1999 (FEK B 1526, 08.07.1999)

¹⁵³ The Government of Greece (2014): National Energy Efficiency Action Plan 2014. Online https://ec.europa.eu/energy/sites/ener/files/documents/EL_NEEAP_en%20version.pdf. Accessed: 24.02.2015.

2.1.14.1. Audits

Mandatory energy audit: The requirements of Article 8 of the EED are contained in Article 10 of Law 4342/2015 combined with Article 17. According to paragraph 10 of Article 10, non-SMEs have to conduct their first energy audit within a year of the law coming into force (i.e. by 9 November 2016). Full details of the implementation are expected to be announced through a Ministerial decision related to Article 17 of the Law.

The following information is based on the content of Law 4342/2015.

- **General definition:** Law 4342/2015 refers to recommendation 2003/361/EC and defines SMEs as those enterprises with less than 250 employees and whose turnover does not exceed EUR 50m or whose balance sheet total does not exceed EUR 43m. Large enterprises are those that are not SMEs.
- **Scope:** There are no known exemptions from the requirements of the draft legislation. However, it is likely that enterprises that are included in the EU Emissions Trading System will be excluded. According to the National Statistics Office there are currently around 400 enterprises in Greece that meet its definition of a large enterprise.
- **Exemptions:** Large enterprises that have implemented ISO 50001 will not have to carry out further energy audits to comply with Article 8 of the EED. This is on the basis that the ISO 50001 system has included an audit of all significant energy use across the company, which aligns with the requirements of Annex VI of the EED. Details will be provided in the Ministerial Decision relating to Article 17 of Law 4342/2015.
- **Deadlines:** Large enterprises have been given a one year extension to comply with the Article 8 requirements. The deadline for compliance is anticipated to be one year from the date at which Greece's legislation comes into force, which would be 9 November 2016.
- **Multi-national companies:** Qualification for Article 8 compliance is based only on the operations of enterprises within Greece. Details will be given in the Ministerial Decision relating to Article 17 of Law 4342/2015.
- **Multi-site companies:** Multi-site companies operating within Greece must comply with the requirements for all sites with significant energy uses. Details will be given in the Ministerial Decision relating to Article 17 of Law 4342/2015.
- **Minimum coverage:** No minimum coverage requirements have been defined. Details will be given in the Ministerial Decision relating to Article 17 of Law 4342/2015.
- **Penalties for non-compliance:** According to Law 4342/2015 (Article 14, paragraph 3), enterprises that do not comply with the relevant obligation of Article 10 of the Law will face a fine of between 5,000 – 100,000 Euros. The exact amount is decided by the Minister of Environment and Energy upon the recommendation of the Department of Environment, Construction, Energy and Mines Inspectorate.
- **Specific provisions for buildings:** No specific provisions have been made for buildings.

- **Specific provisions for transport:** No specific provisions have been made for transport operations.
- **Monitoring:** The Department of Environment, Construction, Energy and Mines Inspectorate at the Ministry of Environment and Energy is responsible for the implementation and administration of the legislation. This is expected to include monitoring, and creating a register of energy auditors. It is hoped (but not confirmed) that the monitoring process and register will be created and put in place before 5 February 2016. The Ministry plans to identify the eligible large enterprises through a number of sources including the Public Revenue Office, industrial associations, Chambers of Commerce, associations of supermarkets, and associations of banks. It intends to use the trade associations as a route to raise awareness of the legislation. Enterprises will be required to send the results of their energy audits to the Ministry (Department of Environment, Construction, Energy and Mines Inspectorate).

2.1.14.2. Energy management systems

No specific support is in place in Greece to help implement energy management systems. The Greek government is currently examining programmes to specifically support the establishment of energy management systems in SMEs.

2.1.14.3. Exchange mechanisms

No specific exchange mechanisms have been put in place in Greece.

2.1.14.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 of the EED in Greece is provided in Table 30. In its third NEEAP Greece sets out plans to introduce financial support for energy efficiency in industry. These aim to improve the energy efficiency of manufacturing enterprises, to reduce energy costs, boost their competitiveness, and also to reduce the impact of climate change resulting from the excessive use of energy.

The types of support planned include either a capital grant to implement energy saving interventions, an interest subsidy on loans, guarantees to obtain bank financing, or a combination of these. Particular emphasis will be placed on supporting SMEs.

Table 30: Summary for the implementation of Article 8 in Greece.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> • Law 4342/2015 (143 A) transposes the EED. Article 10 of this transposes Article 8 • |
| | How are large enterprises defined? | <ul style="list-style-type: none"> • More than 250 employees and a turnover of over EUR 50m or a balance sheet of over EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> • Qualification is based only on operations within Greece |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> • Law 4342/2015 is already in place to support energy audits • Campaign or financial schemes are under consideration |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> • Compliance is available through certification to ISO 50001, with an audit meeting the requirements of EED Annex VI |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> • No information available |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> • The Department of Environment, Construction, Energy and Mines Inspectorate at the Ministry of Environment and Energy is responsible for monitoring compliance. Processes will be established once the legislation is implemented |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> • Penalties of between EUR 5,000 and 100,0000 |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> • SMEs are included in the range of enterprises targeted by Greek law 4342/2015 |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> • Schemes are currently being developed |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> • Schemes are currently being examined |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> • Engagement is usually through trade associations and tax authorities |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> • Campaigns are currently being considered |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> • Trade associations can help to exchange information |

2.1.15. Hungary

The official body responsible for energy policy in Hungary is the Ministry of National Development. In Hungary's second NEEAP from 2011, the most recent communication to the European Commission, general strategies and plans as well as specific measures are cited. These partially address energy use in enterprises, technological modernisation of SMEs, energy consumption reports or voluntary agreements on audits and therefore might be consistent with the aims of Article 8 EED.¹⁵⁴ However, the third National Energy Efficiency Action Plan III (NEEAP) of Hungary was recently approved by a government decision on 18 August 2015.

The EED is transposed in Hungarian Law by Act LVII of 2015¹⁵⁵ on Energy Efficiency which came into force on 7 June 2015. Secondary legislation related to the implementation of Article 8 is the Government Decree 122/2015 (V. 26.) on the Implementation of Energy Efficiency Act, NFM Decree (NFM - Ministry of National Development) 25/2015 (V. 26.) on publishing information on promotion of energy efficiency and NFM Decree 26/2015 (V. 26.) on detailed rules for the disclosure of information on energy audits and the registration bodies' annual report. The Energy Efficiency Act is the framework of an energy efficiency monitoring system. The HEA (Hungarian Energy and Public Utility Regulatory Authority) is responsible for the audits monitoring and will collect and summarise data from the different alternative policy measures, and report to the Ministry of National Development. Table 31 provides an overview of instruments currently implemented in Hungary. These instruments are further detailed below.

Table 31: Overview of instruments in Hungary.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| The Virtual Power Plant Energy Efficiency Programme | • | • | | | • | | | • | |

In addition to the mandatory audits, Hungary provides general support to SMEs via the GINOP (Operational Programme for Economic Development and Innovation; Gazdaságfejlesztési és Innovációs Operatív Programme)¹⁵⁶ supported by the European Union. Within this programme, a set of seven priority axes is described, including an axis on energy efficiency and renewable energies (Energiahatékonyság és megújuló energia). In total, a budget of about EUR 220m (HUF 70 billion) is allocated to this axis between 2014 and 2020. This budget shall serve to finance improvements in energy efficiency in SMEs. Corresponding programmes to encourage SMEs to carry out energy audits and their subsequent implementation are still under elaboration. Further

¹⁵⁴ Ministry of National Development (2011): Second National Energy Efficiency Action Plan of Hungary until 2016 with an outlook to 2020. Online: <http://www.buildup.eu/system/files/content/HU%20-%20Energy%20Efficiency%20Action%20Plan%20EN.pdf>. Accessed: 11.08.15

¹⁵⁵ The National Assembly of Hungary, Act LVII of 2015 on Energy Efficiency. Online: <http://faolex.fao.org/docs/pdf/hun146629.pdf>. Accessed: 11.08.15

¹⁵⁶ Webpage with information on GINOP: http://palyazat.gov.hu/forum_topic_pate/765. Accessed: 11.08.15

indirect promotion of energy efficiency is implemented by other axes under the Operational Programme dealing with capacity building and research and innovation.¹⁵⁸

2.1.15.1. Energy audits

Mandatory energy audits for large companies: To comply with Article 8 of the EED, the national Act LVII of 2015 on Energy Efficiency came into force on 7 June 2015. More detailed interpretation concerning the regulation and implementation is provided by the Hungarian Energy Authority in a set of FAQs¹⁶³ on energy audits and management systems documents.

- **General definition:** Large enterprises are defined as non-SMEs according to regulations of Act XXXIV of 2004 on subsidising of SMEs. There, a reference to the Commission's Recommendation 2003/361/EC on the definition of micro, small and medium-sized enterprises is made.¹⁵⁷ Thus, the Hungarian definition of large companies is in line with the EC definition.
- **Scope:** In Hungary, no exemptions are stated for large companies, but small linked companies may be excluded (see multi-site companies). There is no published number of large enterprises qualifying as independent companies. The exact number of linked and/or partner enterprises is still unknown. Estimates indicate an overall size of between 4,000 and 7,000 enterprises.¹⁵⁷
- **Exemptions:** A certified ISO 50001 energy management system can serve as an alternative to the obligation to carry out a mandatory audit if it includes an audit and meets all requirements of the mandatory audit. Certification according to ISO 14001 or EMAS is not considered as an alternative system.¹⁵⁷
- **Deadlines:** Technically, the deadline of 5 December 2015 applies for the mandatory audits. However, companies will only be fined if they do not comply with the obligation to carry out an audit by 31 December 2016.¹⁵⁷
- **Multi-national companies:** Companies registered in Hungary have to conduct an energy audit.¹⁵⁷
- **Multi-site companies:** The companies within a group are individually obliged to carry out an audit, but they can conduct it as a group. If a company is a large enterprise as a group, all companies registered in Hungary need to carry out an energy audit. An exemption is based on the "5% rule". It can be applied if a partner or linked enterprise is an SME and its energy consumption is less than 5% of the consumption of the most energy consuming company in the group of companies. According to Article 5 subparagraphs (1)-(3) of Act XXXIV of 2004 on subsidising of SMEs, at least the last two (consolidated) financial balance sheets should be taken into account when determining whether a company is an SME or not.¹⁵⁷
- **Minimum coverage:** The minimum coverage has not yet been decided upon. Hence it is the responsibility of the assigned energy auditor to comply with the commitment of giving a reliable picture of overall energy performance.¹⁵⁷
- **Penalties for non-compliance:** A fine of up to approximately EUR 320 (HUF 100,000) is to be paid by an energy auditor in case of not meeting the audit requirements and non-cooperation with the HEA. A company has to pay a fine of up

¹⁵⁷ Personal communication by Mr. Zoboky (Department for Green Economy Development, Ministry of National Development) of 01.09.2015.

to approximately EUR 32,000 (HUF 10 m.) in the case of non-compliance with the requirement to implement an audit and up to roughly EUR 48,000 (HUF 15 m.) in case of repeated non-compliance.¹⁵⁷

- **Specific provisions for buildings:** The minimum criteria mentioned in Annex VI have to be met. Responsibilities are specified in the FAQ in connection with proportionality. The obligation of the tenant as a large enterprise depends on the used share of the whole building in terms of floor-area and energy consumption. If the tenant uses only small part (under 50%) of the building and consumes less than 50% of the whole energy consumption of the building, he is not obligated to carry out an energy audit. If he uses more than 50% of the building or consumes the relevant part of the whole energy consumption of the building the tenant is obligated to carry out an audit for the whole building and to specify the impacts of his own activity proportionally. If the landlord is a large enterprise too, both of them are obligated to carry out the audit. In this case it is practical to carry out the audit in co-operation or with mutual agreement.¹⁵⁷
- **Specific provisions for transport:** The minimum criteria mentioned in Annex VI have to be met.¹⁵⁷ Depending on who is responsible for the fuel consumption, it may be the owner or the operator of the vehicles that is obligated to carry out an energy audit regarding transport.¹⁵⁸
- **Monitoring:** HEA is responsible for the monitoring of the energy audits. Energy auditors have to submit information about the audit online to the Hungarian Energy Authority. Large consumers are obligated to report their energy consumption directly to HEA based on a guide.¹⁵⁹ If a follow-up audit is conducted, information about energy savings achieved after the first audit also have to be submitted. Companies, however, are not obliged to implement the suggested measures.¹⁵⁸ Within the National Statistical Data Collection Programme regulated by Gov. Decree No 288/2009 (respectively its later modification Decree No 257/2010), the HEA manages the main part of Hungarian energy statistics.¹⁵⁸
- **The Virtual Power Plant Energy Efficiency Programme – energy efficiency by the industry:** This programme is co-financed by the EU Cohesion Fund and was established in 2011 to help reach annual energy savings targets in the industrial sector. The companies initially complete a free self-assessment online-questionnaire¹⁶⁰ or complete the assessment with the help of an accredited business advisor. Afterwards, the companies receive an evaluation of their estimated potential and management qualities in respect of energy efficiency. A check of the organisation's management system, energy efficiency and energy efficiency goals and action plans are part of the evaluation. These elements of the programme can be seen as simplified energy audits, which do not meet the minimum criteria from the EED, but reflect the efficiency status of and opportunities for the participating companies.¹⁶¹ A certified award "Energy Efficiency Company" is awarded to those companies achieving substantial energy efficiency improvements. Individual developments regarding the energy efficiency of companies and their evaluations are collected in a knowledge database. Conferences and dissemination activities are

¹⁵⁸ Personal communication by Mr. Kapros (Hungarian Energy and Public Utility Regulatory) of 10.08.2015.

¹⁵⁹ Hungarian Energy and Public Utility Regulatory Authority (2015): Statistical information. Questions and guides for the report on energy consumption are available online: <http://www.mekh.hu/statisztikai-informacios-adattar-osap>. Accessed: 11.08.15

¹⁶⁰ Virtualiseromu (2015): Virtual Power Plant Energy Efficiency Program - Questionnaire: <http://virtualiseromu.hu/ingyenes-onertekeles>. Accessed: 11.08.15

¹⁶¹ Virtualiseromu (2015): Virtual Power Plant Energy Efficiency Program (Virtuális Erőmű Program™). Online: <http://virtualiseromu.hu/> Accessed: 11.08.15

also part of the programme. The participating companies gain a useful overview of energy issues, while ESCOs might get in touch with potential partners.¹⁵⁸ The programme runs between 2011 and 2020 under the lead of Virtuális Erőmű Programme Nonprofit Ltd. Agency.¹⁶²

2.1.15.2. Energy management systems

There are no specific instruments in Hungary that address energy management systems. However, some elements of the Virtual Power Plant Energy Efficiency Programme mentioned above relate to activities on energy management.

2.1.15.3. Exchange mechanisms

The Hungarian Energy Authority has provided information and an interpretation of the regulation in a set of FAQs.¹⁶³ The focus in Hungary is on conferences with the participation of companies. These are sometimes directly supported by the Ministry of National Development and/or the Hungarian Energy Authority.

2.1.15.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Hungary is provided in Table 32. As the primary legislation entered into force in June 2015, the implementation process is still ongoing. A webpage on energy efficiency pursuant to Decree 25/2015 will provide special information for SMEs about energy audits and management systems. An FAQ document by the Hungarian Energy Authority was published in late August 2015.¹⁶³

In line with the programmes named in the “New Széchenyi Plan”¹⁶⁴, voluntary agreements were mentioned in the second National Energy Efficiency Plan as a planned action, which has not yet been implemented. Other programmes from New Széchenyi plan are also ongoing; some are in an initial stage. Additionally, it is planned to establish a Network of National Energy Engineers. They will operate on a county or regional basis and could play an important role as small energy offices for motivating SMEs or providing support in the case of specific questions on energy efficiency. A governmental decision has not been made on this yet.

¹⁶² Database of the International Energy Agency (2015): Policies and Measures for Hungary. see: The Virtual Power Plant Energy Efficiency Program – energy efficiency by the industry. Online: <http://www.iea.org/policiesandmeasures/energyefficiency/index.php?country=Hungary> Accessed: 11.08.15

¹⁶³ Hungarian Energy and Public Utility Regulatory Authority (2015): FAQs on energy audits and management systems. Online: http://www.mekh.hu/download/2/17/10000/gyik_150824.pdf. Accessed: 31.08.15

¹⁶⁴ Ministry for National Economy Hungary (2010): New Széchenyi Plan. Preliminary, abridged Version for public review. The Development Strategy of Recovery and Progress. Online: http://www.polgariszemle.hu/app/data/New_Szechenyi_Plan.pdf. Accessed: 11.08.15

Table 32: Summary for the implementation of Article 8 in Hungary.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Primary legislation: Transposition of the EED into national law by Act LVII of 2015 on Energy Efficiency of 7 June 2015 Secondary legislation: Government Decree 122/2015 (V. 26.), NFM Decrees 25/2015 (V. 26.) and 26/2015 (V. 26.) |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Definition of large enterprises in Act XXXIV of 2004 on subsidising of SMEs referring to Commission Recommendation 2003/361/EC |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Companies registered in Hungarian territory subject to mandatory energy audit |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> No specific instruments for large companies in place |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Compliance given if ISO 50001 management certification provided to Hungarian Energy Authority Exemptions according to 5% rule possible in multi-site companies |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No information available yet |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Energy auditors to submit information online to HEA also containing information about achieved energy savings if second audit is conducted |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Auditor: Penalty for non-compliance with minimum requirements of up to EUR 320 (HUF 100,000) Company: Up to EUR 32, 000 (HUF 10 m) for not carrying out any audit at all, up to EUR 48,000 (HUF 15 m) for repeated non-compliance |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> GINOP supports SMEs concerning energy efficiency |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Webpage pursuant to Decree 25/2015 to provide specific information for SMEs about to be set up The Virtual Power Plant Energy Efficiency Programme – energy efficiency by the industry, co-financed by EU Cohesion Fund |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> No specific instruments have for energy management systems implemented in Hungary Topic partially covered by virtual power plant programme |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> No information available |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Webpage with information about energy audits and management systems to be set up Conferences to be organised |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No information on specific organisations to help in information exchange |

2.1.16. Ireland

The implementation of the EED in the Republic of Ireland was transposed into Irish Law under Statutory Instrument (SI) 426 of 2014¹⁶⁵ and is the responsibility of the Department of Communication, Energy and Natural Resources (DCENR) with a number of key aspects of Article 8 requirements delivered through the Sustainable Energy Authority of Ireland (SEAI). The most recent formal communication on implementation of the Energy Efficiency Directive in Ireland was the third NEEAP dated April 2014.¹⁶⁶

Many of the components of Article 8 are in place through the legislative mechanisms laid in SI 426 of 2014 and supported by administrative processes. These include a scheme for mandatory energy audits of large enterprises and information exchange and support programmes for SMEs and other organisations (Table 33). These instruments are further detailed below.

Table 33: Overview of instruments in Ireland.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | (•) | • | | | • | | | |
| SEAI Energy Agreements Programme (EAP) | • | | | • | | | • | | |
| Large Industry Energy Network (LIEN) | • | | | | • | | • | | |
| (•): possible inclusion of SME due to energy threshold | | | | | | | | | |

2.1.16.1. Audits

Mandatory energy audits (Energy Auditing Scheme): The Republic of Ireland has implemented energy audit obligations for large enterprises which addresses the requirements of Article 8. Statutory Instrument 426 of 2014 was published on 3 October 2014 and outlines the requirements for large enterprises to undertake mandatory energy audits. This legislation has resulted in the establishment of the “Energy Auditing Scheme”, which is administered by the Sustainable Energy Authority of Ireland (SEAI). Details of the scheme obligations and requirements¹⁶⁷ and supporting frequently asked questions¹⁶⁸ were issued in late May 2015. These were supported by

¹⁶⁵ Office Of The Attorney General (2014): S.I. No. 426/2014 – European Union (Energy Efficiency) Regulations 2014. Online: <http://www.irishstatutebook.ie/eli/2014/si/426/made/en/pdf>. Accessed: 15.10.2015.

¹⁶⁶ Department Of Communications, Energy & Natural Resources (2014): National Energy Efficiency Action Plan 2014. Online: <https://ec.europa.eu/energy/en/topics/energy-efficiency/energy-efficiency-directive/national-energy-efficiency-action-plans>. Accessed: 15.10.2015.

¹⁶⁷ SEAI (2015): Energy Auditing Scheme Guidance Note. Online: http://www.seai.ie/Your_Business/Energy-Auditing-Scheme/Energy-Audit-Scheme-Guidance-Note-Ver-004-29_07_2015.pdf. Accessed: 15.10.2015.

¹⁶⁸ SEAI (2015): Energy Auditing Scheme FAQs. Online: http://www.seai.ie/Your_Business/Energy-Auditing-Scheme/Energy-Audit-Scheme-FAQs-Ver-004_29_07_2015.pdf. Accessed: 15.10.2015.

details on the Energy Auditor Registry that accompanies the Energy Auditing Scheme.¹⁶⁹

- **General definition:** Large enterprises are defined as having 250 or more employees, or less than 250 employees but with an annual turnover of more than EUR 50m and a balance sheet of more than EUR 43m. This definition is in line with that set out in the EED, however, qualification is defined at the individual company level rather than the group level (as set out in 2003/361/EC). The scheme also applies to Public Service Organisations that either meet the definition of a large enterprise, or have either an individual building of more than 500m² floor area or an annual energy spend of more than EUR 35,000.
- **Scope:** Energy use that is covered by a Greenhouse Gas Emissions Permit (under the EU Emissions Trading Scheme) is exempt from the regulations.^{170,171} Therefore companies only need to include energy that is consumed and not covered by other regulation. It is anticipated that the energy auditing scheme will apply to around 600 companies. This means that the scheme will engage approximately four times the number of enterprises currently engaged in the Large Industry Energy Network (see description below in the section on Exchange Mechanisms) and its programmes of energy management/efficiency support.
- **Exemptions:** Organisations can implement an energy management system that is certified to the internationally recognised standard (ISO 50001) in place of undertaking audits¹⁷². A company is exempted from the requirement to undertake energy audits if it has fully implemented an energy or environmental management system that is certified to ISO 50001 or ISO 14001 by 5 December 2015. The energy management system must cover 70% of total energy use by the company, including heat, power and transport uses. Where an enterprise has commenced implementation of an energy management system through an SEAI agreement, then they have until June 2016 to complete the certification process. However, the initial energy review must have been completed by 5 December 2015. The energy review completed as part of this alternative route must meet the minimum requirements of Annex VI of the EED.
- **Deadlines:** Audits must be completed by 5 December 2015 and whilst historical audits can be used to comply they must have been completed since September 2014, have been completed by a person now accredited under the Register of Energy Auditors and comply with the minimum criteria set out in Annex VI of the EED. Enterprises complying by implementing an energy management system must be certified by 5 December 2015 or - if the system is developed under an agreement with SEAI - by June 2016. In the case of the latter, the enterprise must start implementation of an energy management system before 5 December 2015.

¹⁶⁹ SEAI (2015): Guidance note for energy auditors. Online: http://www.seai.ie/Your_Business/Energy-Auditing-Scheme/Energy-Auditor-Guidance-Note-Ver-004_29_07_2015.pdf. Accessed: 15.10.2015.

¹⁷⁰ Office Of The Attorney General (2014): S.I. No. 426/2014 – European Union (Energy Efficiency) Regulations 2014, Part 1 (5), Page 10. Online: <http://www.irishstatutebook.ie/eli/2014/si/426/made/en/pdf>. Accessed: 15.10.2015.

¹⁷¹ SEAI (2015): Energy Auditing Scheme FAQs, Q3a. Online: http://www.seai.ie/Your_Business/Energy-Auditing-Scheme/Energy-Audit-Scheme-FAQs-Ver-004_29_07_2015.pdf. Accessed: 15.10.2015.

¹⁷² SEAI (2015): Energy Auditing Scheme FAQs, Q3b. Online: http://www.seai.ie/Your_Business/Energy-Auditing-Scheme/Energy-Audit-Scheme-FAQs-Ver-004_29_07_2015.pdf. Accessed: 15.10.2015.

- **Multi-national companies:** The definition of a large enterprise applies to each legal entity registered in Ireland. It is not applied at the group level but for each separate registered legal entity independently.¹⁷³
- **Multi-site companies:** If a company has multiple sites it can complete audits of a sample of sites with similar business operations to build a representative picture.
- **Minimum coverage:** The Energy Auditing scheme requires companies to measure all energy consumption including thermal, electrical and transport energy, and to cover at least 70% of the total energy consumption with audits or a certified energy management system. This threshold may be reviewed in future years.
- **Penalties for non-compliance:** Penalties for non-compliance will not be implemented in 2015. From 2016 it is envisaged that there will be fines (up to EUR 5,000) levied on the individual responsible (e.g. company directors) fixed in accordance with legislation. SI 246 of 2014, in which Regulation 16 states a Class A fine of EUR 5,000. It is planned that compliance assessment will begin in 2016 and penalties as provided for in the legislation will be applied.¹⁷⁴
- **Specific provisions for buildings:** No information was available on specific provisions for buildings in Ireland.
- **Specific provisions for transport:** Transport energy must be included within the assessment of total energy where the company owns or operates the vehicle or vessel. This must include fuel used by air or sea transport for journeys that start and/or end in Ireland. It must also include road freight and cars where fuel use is paid for directly by the company. Rail travel is only included if the company operates the trains.¹⁷⁵
- **Monitoring:** Registration for the scheme is subject to annual review and renewal via an online registry. The registry is available through the SEAI website. Participant companies must notify SEAI that they are compliant. They are not required to submit any documentation relating to compliance but must retain evidence of compliance on file for inspection. SEAI will be undertaking random audits of companies and every participant is required to keep records to demonstrate their compliance, or face penalties. There is no legal requirement to implement audit recommendations.

SEAI also provides an energy advice and mentoring service to SMEs, which can include an energy assessment.¹⁷⁶

¹⁷³ SEAI (2015): Energy Auditing Scheme FAQs, Q4. Online: http://www.seai.ie/Your_Business/Energy-Auditing-Scheme/Energy-Audit-Scheme-FAQs-Ver-004_29_07_2015.pdf. Accessed: 15.10.2015.

¹⁷⁴ Personal communication by Mr Ivan Sproule (SEAI) of 01.09.2015

¹⁷⁵ SEAI (2015): Energy Auditing Scheme FAQs, Q18. Online: http://www.seai.ie/Your_Business/Energy-Auditing-Scheme/Energy-Audit-Scheme-FAQs-Ver-004_29_07_2015.pdf. Accessed: 15.10.2015.

¹⁷⁶ SEAI (2015): SME Support Centre, http://www.seai.ie/Your_Business/SEIs_services_for_SMEs/. Accessed: 01.09.2015.

Table 34: Summary for the implementation of Article 8 in Ireland.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Statutory Instrument (SI) 426 of 2014 and supporting guidance documentation and frequently asked questions. These requirements also apply to large public organisations. |
| | How are large enterprises defined? | <ul style="list-style-type: none"> 250 or more employees, or less than 250 employees but with an annual turnover of more than EUR 50m and a balance sheet of more than EUR 43m. |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Qualification based only on legal entities registered in Ireland. Not every site needs to be audited, the audit must cover a representative sample and meet a minimum of 70% of the total energy use (including heat, power and transport energy). |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Large enterprises to undertake energy audits or implement an energy management system certified to an international standard by 5 December 2015. Companies in an agreement with SEAI have until June 2016 to implement an energy management system, so long as the initial aspects of it have been started by 5 December 2015. |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Organisations can implement an energy management system (certified to ISO 50001 or ISO 14001) in place of undertaking audits. Energy use covered by a greenhouse gas permit is exempt |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> This is unclear. The regulations do not require companies to share the results of an audit, or even notify the regulator of the method of compliance. |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Companies must notify SEAI that they are compliant but do not need to provide any evidence of this. SEAI will be undertaking random audits of companies. |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> No penalties during the first year of the scheme (2015). In subsequent years penalties will be introduced and the details provided at that time. |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> SME Advice and Mentoring scheme focuses on providing generic energy management information to SMEs. This can include energy audits and assistance with energy management systems. |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> There are currently no SEAI programmes that provide financial support to commercial organisations or public sector bodies. |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Advice and Mentoring scheme - free to SMEs, provides a site energy audit plus follow up mentoring support. |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> SEAI provides energy management training to SMEs. Energy management training is free to SME participants. Three courses are available, dependent on energy bill size. |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> SEAI Website and communications |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> SEAI and large industrial energy users |

2.1.16.2. Energy management systems

Energy Agreements Programme (EAP): The EAP¹⁷⁷ is a subset of the Large Industry Energy Network (see below) and supports large energy users in establishing and achieving ISO 50001. Participation is voluntary and, by being involved, companies commit to a three year relationship with SEAI, implementing ISO 50001 and to completing at least three detailed investigations into energy efficiency projects, particularly considering new technology or improvements to core business processes that are energy intensive. In return, SEAI provides support through:

- an assigned one-to-one agreements support manager who provides both general and technical advice to companies;
- completion of a gap analysis to identify the company's needs in achieving ISO 50001 and support in implementation of an energy management system;
- identification of areas for detailed investigation and provision of financial support for undertaking them;
- organisation and delivery of tailored training materials (including workshops) and networking events; and,
- publicising a company's participation in the programme.

The programme is open to large energy users and currently has around 70 members.

2.1.16.3. Exchange mechanisms

Large Industry Energy Network (LIEN): The Large Industry Energy Network (LIEN) is a voluntary group, facilitated by the SEAI, of companies that work together to develop and maintain robust energy management systems and share good practice information. A total of 175 of Ireland's largest energy users are members of the LIEN, accounting for approximately 20% of national total energy demand. Almost half the companies involved are also members of the EAP, and are now working towards the new international standard ISO 50001. The LIEN organises annual networking events, workshops, seminars and site visits, which provide the opportunity for members to meet and learn from specialists, including energy experts, and also from their fellow energy managers.¹⁷⁸

2.1.16.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Ireland is provided in Table 34. No further implementation is anticipated, all aspects of Article 8 of the EED are considered to have been transposed and implemented.

2.1.17. Italy

According to the third Italian NEEAP from 2014¹⁷⁹, the most prominent instrument in the field of energy efficiency policy in Italy is the Energy Efficiency Certificates Scheme (known as the white certificates system). According to the National Energy Strategy, this instrument is to cover more than a third of new energy savings to be achieved by 2020. The responsible body for the implementation of the EED in Italy is the Italian

¹⁷⁷ SEAI (2015): Energy Agreements Overview.

¹⁷⁸ SEAI (2014): Large Industry Energy Network Report: Collaborating on Energy Efficiency. Driving Ambition. Online: http://www.seai.ie/Your_Business/Large_Energy_Users/LIEN/LIEN_Reports/LIEN-Annual-Report-2013.pdf. Accessed: 06.10.2015.

¹⁷⁹ Italian government (2014): Italian Energy Efficiency Action Plan. Online: http://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_italy.pdf. Accessed: 06.05.2015.

Ministry of Economic Development. Other than the mandatory requirements of Article 8 of the EED, there are currently no specific programmes in Italy that address energy audits or energy management systems in large companies at a national level. However, there was a funding programme called “Trend programme” carried out by Lombardy Region and funded by the European Regional Development Fund which was discontinued in 2013. This programme covered approximately 100 SMEs and aimed at promoting the implementation of energy audits in the manufacturing sector. Its main goal was to promote awareness, competencies and tools for energy efficiency in SMEs.¹⁸⁰ In its third NEEAP, the Ministry announced a call for regional funding programmes to support energy audits or energy management systems in SMEs. Italian Regions can apply for co-funding to support the performance of energy audits in SMEs that have opened. Table 35 summarises the instruments in Italy, which will be described in further detail below.

Table 35: Overview of instruments in Italy.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|------------------|------------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | (•) | • | | | • | | | |
| (Call for co-funding of Regional programmes) | | (•) ¹ | (•) ¹ | | | | | (•) ¹ | |
| (•): Possible inclusion of SMEs due to energy threshold (•) ¹ : Call for selecting and co-funding of programmes currently open | | | | | | | | | |

2.1.17.1. Energy audits

Mandatory energy audit: Italy transposed the obligation resulting from Article 8 for large companies with production sites in the national territory by Decree No. 102 of 12 July 2014.¹⁸¹ In May 2015 the Italian Ministry published a Guidance Document in Italian to support companies regarding the interpretation of the national legislation.¹⁸²

- **General definition:** According to the Decree No. 102, any large company that has more than 250 employees has to fulfil the obligation to conduct an energy audit. If a company has less than 250 employees, but a turnover of more than EUR 50m and a balance sheet of more than EUR 43m, this company is also covered by the regulation.¹⁸² To fall under the regulation, a large company must meet the criteria in the last two fiscal years. Additionally, Italy has extended the target group that has to conduct an energy audit to include energy-intensive companies that are registered in the annual list CCSE (Cassa Conguaglio per il Settore Elettric, Eng-

¹⁸⁰ Concerted Action (2014): CA EED – Good Practice Factsheet Template TREND program – Italy. Online: <http://www.esd-ca.eu/good-practices/good-practice-factsheets/energy-services>. Accessed: 06.05.2015.

¹⁸¹ Ministry of Economy and Finance (2015): DECRETO LEGISLATIVO 4 luglio 2014, No. 102. Online: <http://www.gazzettaufficiale.it/eli/id/2014/07/18/14G00113/sg>. Accessed: 02.09.2015.

¹⁸² Ministero dello Sviluppo Economico (2015): CHIARIMENTI IN MATERIA DI DIAGNOSI ENERGETICA NELLE IMPRESE AI SENSI DELL'ARTICOLO 8 DEL DECRETO LEGISLATIVO N. 102 DEL 2014. Online: http://www.sviluppoeconomico.gov.it/images/stories/documenti/Efficienza_energetica_CHIARIMENTI_DI_AGNOSI_IMPRESI_19_05_15.pdf. Accessed: 05.08.2015.

lish: Equalisation Fund for the Electricity Sector) in the ministerial Decree of 5 April 2013.¹⁸²

- **Scope:** The obligation does not apply to public administration offices.¹⁸² Approximately 3,500 to 4,000 companies exceed the employee threshold of 250. At the time of writing, four companies have submitted formal energy audits to ENEA.¹⁸³ Roughly, 183 organisations and 220 production sites already have been certified against ISO 50001.¹⁸⁴
- **Exemptions:** The introduction of an energy or environmental system allows the company to request an exemption from the regulation. However, the ISO 50001 management system must explicitly require the company to carry out an energy audit. The same applies to environmental management systems implemented in line with EMAS or ISO 14001.¹⁸²
- **Deadlines:** All large companies covered by the regulation in Italy have to finalise their energy audit or fully implement an energy management system by 5 December 2015. Afterwards, mandatory energy audits have to be carried out at least every fourth year, calculated from the date of the previous audit.¹⁸²
- **Multi-national companies:** When calculating the qualification thresholds for the definition of a large company, figures must be accounted for at group level. However, sites abroad are not included in the requirement to undertake an audit.¹⁸²
- **Multi-site companies:** The calculation of the thresholds (number of employees, turnover and balance sheet total) must include subsidiaries and other enterprises operating in Italy, in cases where the enterprise has over 25% of the ownership or voting rights.¹⁸²
- **Minimum coverage:** According to Annex VI of the EED, energy audits have to be proportionate and sufficiently representative. If a company group has a large number of different sites, instead of auditing all of them, it can undertake audits of a representative sample.¹⁸²
- **Penalties for non-compliance:** According to Article 16 paragraph 1 Decree Law No. 102, companies that do not undertake energy audits will be subject to an administrative fine. The penalty does not exempt them from performing the energy audit, and this must still be undertaken and compliance communicated to ENEA (Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile, English: National agency for new technologies, Energy and sustainable economic development) within six months of the imposition of the sanction. The Ministry of Economic Development is responsible for determining the size of the fine, which is anticipated to be between EUR 4,000 and 40,000. If the energy audit has any irregularities, the fines range from EUR 2,000 up to EUR 20,000.^{182,183}
- **Specific provisions for buildings:** Buildings owned by the company must be covered by the energy audit and the owner is required to submit the results to ENEA. In the case of real estate companies, for rented apartments that have an energy certification, certification can be collected from the tenants and presented to ENEA.¹⁸³

¹⁸³ Personal communication by Mr. Mauro Mallone (Ministry of Economic Development) of 31.07.2015.

¹⁸⁴ Fire (2014): Elenco organizzazioni e siti certificate in Italia. Elaborazione FIRE. Online: http://www.fire-italia.it/2014_azienze_certificate_ISO_50001.pdf. Accessed: 05.08.2015.

- **Specific provisions for transport:** Transportation activities of the respective company must be covered by the energy audit. If the entity is a transport company, the company itself will have to be considered as a site and the energy audit will be conducted in line with UNI-EN 16247-4.¹⁸² The audit shall cover all transportation activities, including cross-border transportation.¹⁸³
- **Monitoring:** After concluding a mandatory energy audit, the legal representative of the company is responsible for communicating the results to ENEA. The same applies to companies that have implemented an alternative system. If companies implement an EMAS environmental management scheme, a communication should also be made to ISPRA (Istituto Superiore per la Protezione e la Ricerca Ambientale Cerca nel sito Ricerca; English: Institute for Environmental Protection and Research).¹⁸² The main results of the audit, including recommendations, will be included in a database, which is currently in preparation. Compliance with the regulation will be monitored via this database, which contains a list of enterprises covered by the regulations. ENEA is responsible for checking at least 3% of the audits each year.¹⁸³

2.1.17.2. Energy management systems

No instruments specifically dealing with the implementation of energy management systems for large enterprises could be identified for Italy.

2.1.17.3. Exchange mechanisms

In Italy there are no special exchange mechanisms which are organised between companies. However, ENEA is responsible for supporting companies by providing information regarding energy audits and energy management systems. ENEA has developed a dedicated helpdesk that provides information to single enterprises and associations. Furthermore, ENEA organises information events in close cooperation with business associations in several Italian cities.¹⁸³

2.1.17.4. Further implementation plan

The Ministry of Economic Development, in agreement with the Ministry of the Environment and Protection of Natural Resources and the Sea, published a call for selecting and co-funding of programmes submitted by the Regions. This programme is designed to support the implementation of energy audits or an energy management system in SMEs. For this purpose, the Decree sets out a sum of EUR 15m per year in the period from 2014 and 2020. Regions shall grant a subsidy of 50% of the expenditure incurred by SMEs in carrying out an energy audit; i.e. half of the costs are covered by the co-funding programme. Energy audits in approximately 15,000 companies could be funded by this programme. This initiative is also supported by ENEA by training auditors, publishing technical guidelines and supporting the Regions in preparing and designing the programmes.¹⁸⁵ The call was met with great interest from the regions. At the current time, the Ministry of Economic Development has received five proposals from Italian regions to set up regional programmes. Due to upcoming elections, other regions have formally requested that the end of the call is postponed to October 2015.¹⁸³ A summary of the current activities related to the implementation of Article 8 in Italy is provided in Table 36.

¹⁸⁵ Italian government (2014): Italian Energy Efficiency Action Plan. Online: http://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_italy.pdf. Accessed: 06.05.2015.

Table 36: Summary for the implementation of Article 8 in Italy.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Decree Law No. 102 from 12 July 2014 Corresponding Guidance Document in Italian published in May 2015 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> More than 250 employees; in cases where a company has less than 250 employees, turnover has to exceed EUR 50m AND the company must have a balance sheet exceeding EUR 43m; additionally, certain energy-intensive industries fall under the obligation |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> For calculation of thresholds, figures at group level (excluding the sites abroad) are relevant |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Currently no instruments at national level in place in Italy |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Obligation does not apply to public administration offices |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> 183 organisations and 220 production sites already have been certified according to ISO 50001; at present four companies have submitted formal energy audits to ENEA |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Results from the energy audit have to be communicated to ENEA, implementation monitored by ENEA (check of 3% of audits per year) Compliance of this regulation ensured by an IT register containing a list of enterprises subjected to the obligation |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Between EUR 4,000 and 40,000 (amount depending on the decision of the Ministry of Economic Development) |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> No support scheme for energy audits especially targeted at SMEs currently in place |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Call for funding programmes at regional level currently open |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Call for funding programmes at regional level currently open |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> No special organisations representing SMEs, but cooperation between authorities and business associations which also represent SMEs |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Several information events for companies (among others organised by ENEA) |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No structured major exchange mechanisms, but various activities for information exchange; ENEA e.g. has a helpdesk informing individual enterprises and associations Several institution support companies regarding the interpretation of the guideline, ABI (Italian Banking Association) prepares for example guidelines how to fulfil the obligation |

2.1.18. Latvia

Energy efficiency activity in Latvia is currently based on the Energy End-use Efficiency Law¹⁸⁶, with detailed provisions for energy efficiency audits in industry set out in the 2013 Cabinet Regulation No 138.¹⁸⁷

In 2013, Latvia also established a “Long-term Energy Strategy 2030 – Competitive Energy for Society”¹⁸⁸ to update the existing policies and targets and plan long-term development of the energy sector, including the achievement of national energy efficiency targets. This strategy outlines that the Ministry of the Economy will develop and facilitate new energy policy guidelines for the period 2014 – 2020.

Article 8 of the EED has not yet been fully transposed into Latvian Law (Table 37). The transposition is in progress and, in the meantime, the Ministry of Energy has published a set of recommendations on mandatory energy audits for large companies.¹⁸⁹

Table 37: Overview of instruments in Latvia.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (●) | | (●) | | | (●) | | | |
| (●): Awaiting the adoption of the new Energy Efficiency Act | | | | | | | | | |

2.1.18.1. Energy audits

Mandatory energy audit: Article 8 of the EED has not yet been fully transposed into Latvian Law. In the meantime, the Ministry of Energy has published some recommendations on mandatory energy audits for large companies.¹⁸⁹ Whilst these are written as recommendations and do not appear to be legally binding, they do refer to the mandatory requirements for energy audits as set out by the EC. At the time of writing, limited information was available regarding the official transposition of Article 8 in Latvia. The following sections detail the information provided by the Recommendations for Mandatory Energy Audits.

- **General definition:** The recommendations on energy audits for large enterprises define a large enterprise as employing more than 249 employees and/or having an annual turnover exceeding EUR 50m and an annual balance sheet exceeding EUR

¹⁸⁶ Energy End-Use Efficiency Law (2014): Online: <http://likumi.lv/doc.php?id=205247>. Accessed: 19.10.2015

¹⁸⁷ Cabinet Regulations no 138 (2013): Regulations on Industrial Energy Audits. Online: <http://likumi.lv/doc.php?id=255935>. Accessed: 19.10.2015

¹⁸⁸ Ministry of Economics of the Republic of Latvia (2013): Long-term Energy Strategy 2030 – Competitive Energy for Society (Strategy 2030).

¹⁸⁹ Ministry of Energy (2015): Recommendations of mandatory energy audits for large companies: Online: [https://em.gov.lv/files/energetika/energoauditi19022015%20\(1\).docx](https://em.gov.lv/files/energetika/energoauditi19022015%20(1).docx). Accessed: 19.10.2015.

43m. It is these enterprise that the recommendations state will have to comply with Article 8. It therefore appears that the Latvian definition of a large enterprise will differ from that of the EC. In order to be obligated to carry out energy audits, a company must have been published on the Ministry of the Economy's list of large enterprises for two consecutive years.

- **Scope:** No companies are excluded from the mandatory audits if they fall under the above definition. Around 272 companies are expected to meet the definition of a large enterprise.¹⁸⁹
- **Exemptions:** Enterprises certified to ISO 50001 will be considered compliant with Article 8 where it covers at least 90% of total energy consumption. Enterprises certified to ISO 14001 environmental management systems will be considered compliant with Article 8 where they cover at least 90% of total energy consumption. Energy management and environmental management systems must be certified by an independent body which is accredited by the Latvian National Accreditation Bureau (LATAK) or the appropriate EU Member State accreditation body.
- **Deadlines:** In line with the EED, the deadline for completion of mandatory energy audits will be 5 December 2015.
- **Multi-national companies:** No specific provisions for multi-national companies are set out in the recommendations.
- **Multi-site companies:** No specific provisions for multi-site companies are set out in the recommendations.
- **Minimum coverage:** According to the recommendations on mandatory energy audits, audits must cover at least 90% of a company's total energy consumption and must include all transport energy, where this makes up more than 10% of the total. The most important sector in which the enterprise operates must be covered by the audit.
- **Penalties for non-compliance:** No information currently available.
- **Specific provisions for buildings:** No information currently available.
- **Specific provisions for transport:** Transport energy must be included in an organisation's energy audit where this makes up more than 10% of the total energy of the organisation. The recommendations for mandatory energy audits state that: Audits of energy consumption in transport shall not include (a) international road transport, aviation and marine fuel and fuel consumption of international rail freight and (b) purchased transport services. These audits must include (a) fuel or electricity consumption used for the operation of the transport operator and (b) fuel or electricity consumption used for transport, the employee driving the employee owned or held by vehicle for business purposes and which has been reimbursed.
- **Monitoring:** The Ministry of the Economy has compiled and published on its website a list of large enterprises that will be required to undergo a mandatory energy audit by 5 December 2015 and once every four years thereafter.¹⁹⁰ Companies

¹⁹⁰ Ministry of the Economy (2015): Ieteikumi obligāto energoauditu veikšanai lielajiem uzņēmumiem (Recommendations for carrying out an energy audit, Section 3) . Online:

must report to the Ministry of Economy on their energy audit performance, including an annual report on measures implemented and savings achieved.

Table 38: Summary for the implementation of Article 8 in Latvia.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Legislation not yet transposed. Current information is based on a set of recommendations for mandatory audits produced by the Ministry of Energy |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Employing more than 249 employees and/or having an annual turnover exceeding EUR 50m and an annual balance sheet exceeding EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> No specific provisions have been made for these enterprises within the current recommendations |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Recommendations on mandatory energy audits |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> ISO 50001 or ISO 14001, when covering more than 90% of total energy consumption |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Unknown |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> The Ministry of Economy holds a list of enterprises required to comply Enterprises must report that audits are completed and must report annually on progress thereafter |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> This information is not yet established, as Article 8 has not been transposed |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Under development through Strategy 2030 |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> None |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> None |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> As set out in Strategy 2030, this is intended to be done through industry associations |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No activities currently in place |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> As set out in Strategy 2030, it is intended that this will be through industry associations |

https://www.em.gov.lv/lv/nozares_politika/energoefektivitate_un_siltumapgade/energoefektivitate/obligati_energoauditi_lielajos_uznemumos/. Accessed: 19.10.2015.

2.1.18.2. Energy management systems

There are no instruments identified for supporting the implementation of energy management systems in Latvia.

2.1.18.3. Exchange mechanisms

There are no exchange mechanisms identified for supporting energy audits and energy management systems in Latvia.

2.1.18.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Latvia is provided in Table 38. Strategy 2030 sets out that improving energy efficiency will be a national priority and that it is necessary to promote the improvement of energy efficiency in SMEs by introducing energy audits and energy management systems. The strategy also states that for the promotion of energy efficiency, it is essential to activate the role of the industry association by triggering a discussion regarding the determination of energy consumption benchmarks in industry. Moreover, it is planned to implement public support mechanisms to promote the introduction of energy efficiency improvement measures in industry.

2.1.19. Lithuania

The Lithuanian Ministry of Energy has appointed the Energy Agency as the designated authority to administer its mandatory energy audit scheme once the new legislation has been passed by Government. However, The Ministry of Energy itself will be responsible for the approval of audit methods and procedures, and the education and training of auditors.

Lithuania's Energy Ministry published its draft Energy Efficiency Law on 3 April 2014 (Energijos efektyvumo įstatymo projektas).¹⁹¹ The draft law (Table 39) addresses all aspects of the implementation of Article 8 requirements, including energy audits, energy management systems, and arrangements for SMEs. The draft law was due to come into force on 6 June 2014 through Order Number 1-149: Jsakymas dėl energijos vartojimo efektyvumo veiksmų (Publication Number 2014-07169).¹⁹² However, this order has been changed and is currently expected to pass through the Lithuanian Parliament in quarter four of 2015 in an amended format. It should be noted that Lithuania already has energy audit legislation in place, which it considers to have more stringent requirements than those of the EED.

¹⁹¹ Ministry Of Energy Of The Republic of Lithuania (2014): Lietuvos Respublikos energijos efektyvumo įstatymo projektas. Online: http://www.lrs.lt/pls/proj/dokpaieska.showdoc_l?p_id=231609&p_fix=n&p_gov=n. Accessed: 15.10.2015.

¹⁹² Ministry Of Energy Of The Republic of Lithuania (2014): Jsakymas dėl energijos vartojimo efektyvumo veiksmų. Online: <http://enmin.lrv.lt/en/legal-acts/main-legal-acts>. Accessed: 15.10.2015.

Table 39: Overview of instruments in Lithuania.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (●) | | (●) | | | (●) | | | |
| (●): Not yet passed by the Lithuanian parliament | | | | | | | | | |

Between 2007 and 2013, the Lithuanian Ministry of Economy provided a funding programme for energy audits (Audit for Industry LT). It was put in place to support industrial businesses with conducting energy audits according to the Lithuanian Energy Appraisal Process Methodology developed in 2010 (Order 1-141).¹⁹³ Any enterprise (large and SMEs) could access up to EUR 30,000 through this programme and it was mandatory to implement improvement measures identified by the audits. The Lithuanian audit methodology standard was developed in 2010 and defines the scope and method for undertaking an energy audit, including any water and heat processes. This is enshrined in Order 1-141 of 4 May 2010. It requires organisations to produce Sankey diagrams, understand the current flows, and identify any potential improvements. The savings potential, investment required and payback period must all be included in the audit report. All audit reports must be submitted to the Lithuanian Ministry of Economy but the completion of audits is not mandatory.

2.1.19.1. Audits

Mandatory energy audit (Energijos efektyvumo įstatymo projektas): Lithuania's Energy Ministry published its draft Energy Efficiency Law on 3 April 2014.¹⁹¹ The draft law addresses all aspects of the implementation of Article 8 requirements, including energy audits, energy management systems, and arrangements for SMEs. The draft law was due to come into force on 6 June 2014 through Order Number 1-149: Jsakymas dėl energijos vartojimo efektyvumo veiksmy (Publication Number 2014-07169).¹⁹⁴ However, this order has been changed and is currently under consultation with industry and is expected to pass through the Lithuanian Parliament in quarter four of 2015. As the Energy Efficiency Law had not been passed at the time of writing, it was not possible to access detailed information on its content.

- **General definition:** The Ministry of the Economy defines SMEs as less than 250 employees, with annual income of less than EUR 40m (LTL 138m) or a balance sheet of less than EUR 27m (TLT 93m).¹⁹⁵ Large enterprises are those that are not

¹⁹³ Ministry Of Energy Of The Republic of Lithuania (2010): Dėl Energijos, energijos išteklių ir vandens vartojimo audito atlikimo technologiniuose procesuose ir įrenginiuose metodikos patvirtinimo. Online: <http://enmin.lrv.lt/en/legal-acts/main-legal-acts>. Accessed: 15.10.2015.

¹⁹⁴ Ministry Of Energy Of The Republic of Lithuania (2014): Jsakymas dėl energijos vartojimo efektyvumo veiksmy. Order Number 1-149. Online: <http://enmin.lrv.lt/en/legal-acts/main-legal-acts>. Accessed: 15.10.2015.

¹⁹⁵ Personal communication by Dr. Vaclovas Kveselis (Lithuanian Energy Institute) on 02.09.2015.

SMEs. Whilst this is in line with the EU definition of SMEs (2003/361/EU), the Lithuanian definition does not make direct reference to this.¹⁹⁶

- **Scope:** The current draft legislation does not provide exemptions for large enterprises to undertaking mandatory energy audits. Within Lithuania there are 76,427 organisations in total, 318 of which can be classed as large enterprises.¹⁹⁵ Many of these large enterprises are already required to complete energy audits under existing Lithuanian law, however, the Ministry of Energy expects that the new legislation will increase the number of audits being undertaken.
- **Exemptions:** Organisations will be considered to be compliant with the requirements of Article 8 if they have implemented an energy management system or environmental management system certified to an international standard (ISO 50001 or ISO 14001) that includes an energy audit.¹⁹¹
- **Deadlines:** The legislation stipulates that all large companies must complete energy audits by 5 December 2015.
- **Multi-national and multi-site companies:** For multi-national companies, only operations undertaken in Lithuania will need to comply with the requirements of the legislation.¹⁹⁵
- **Minimum coverage:** No minimum coverage requirements are stipulated within the draft legislation.
- **Penalties for non-compliance:** Penalties for non-compliance have not yet been agreed, and are being considered as part of the current consultation with industry.¹⁹⁵
- **Specific provisions for buildings:** No specific provisions for buildings are made within the draft legislation.
- **Specific provisions for transport:** No specific provisions for transport are made within the draft legislation.
- **Monitoring:** The Ministry of Energy has appointed the Energy Agency as the designated authority to administer the mandatory energy audit scheme. Energy auditors are obliged to report the audits they have conducted every six months, and present a summary of their energy audit reports to the Energy Agency.¹⁹⁵

2.1.19.2. Energy management systems

There are no dedicated instruments which specifically deal with the implementation of energy management systems in Lithuania.

2.1.19.3. Exchange mechanisms

There are currently no structured exchange mechanisms in place.

¹⁹⁶ Ministry Of Economy Of The Republic of Lithuania (2008): Small and Medium-Sized Business. Online: http://www.ukmin.lt/web/en/business_environment/small_medium_business. Accessed: 15.10.2015.

Table 40: Summary for the implementation of Article 8 in Lithuania.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> None; Energy Efficiency Law currently in a draft format for consultation and expected to be passed in quarter four of 2015 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> The Ministry of the Economy defines SMEs as less than 250 employees, with annual income of less than EUR 40m or a balance sheet of less than EUR 27m; large enterprises are those that are not SMEs |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Law applies only to Lithuanian operations of multi-national companies |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> None |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Companies with energy or environment management systems certified to ISO 14001 or ISO 50001 considered to be compliant as long as the system includes an energy audit |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No law yet passed. Energy audits are expected to significantly increase once the law is passed |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Auditors to report audits conducted to the Energy Agency every six months |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> No penalties are currently established |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> None |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> SMEs could previously apply for funding to undertake audits through the Audit for Industry LT funding programme |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> None |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> No specific engagement programmes identified |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No specific activity |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No specific activity |

2.1.19.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in the Lithuania is provided in Table 40. The draft law transposing the requirements of the

EED is expected to be passed in quarter four of 2015. It is likely that supporting schemes and documentation will arrive subsequent to this law being passed.

2.1.20. Luxembourg

The most recent official communication on the status of the implementation of Article 8 of the EED in Luxembourg is the third Luxembourgian NEEAP by the Ministry of Economic Affairs and Foreign Trade.¹⁹⁷ According to the NEEAP, all final customers currently have access to energy audits and households, companies and public institutions are incentivised by various means to conduct such an audit.¹⁹⁷

Table 41: Overview of instruments in Luxembourg.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (•) | | (•) | | | (•) | | | |
| Mandatory energy audits for energy-intensive companies (non-EED) | • | • | • | | | • | | | |
| Funding scheme for energy audits in energy-intensive companies | • | • | • | | | | | • | |
| Voluntary agreement on industrial energy efficiency | • | • | • | • | | | • | | |
| (•): Under preparation | | | | | | | | | |

At the current time, the primary legislation on the implementation of the EED, including the transposition of Article 8, is still under preparation. Energy efficiency in Luxembourg is governed by a Law on the Rational Use of Energy¹⁹⁸ (Loi du 5 août 1993 concernant l'utilisation rationnelle de l'énergie) from 1993. According to this law, industrial and commercial companies with a minimum energy demand have to establish an energy balance and to regularly review their potential to make energy savings. The transposition of the entire EED, which is currently being prepared, is expected to replace this law.¹⁹⁹ In addition, details for the audits, and a funding scheme for them,

¹⁹⁷ Le Gouvernement Du Grand-Duché de Luxembourg (2014): Third National Energy Efficiency Action Plan for Luxembourg. Under Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC, December 2014. Online: https://ec.europa.eu/energy/sites/ener/files/documents/NEEAP_LU_EN.pdf. Accessed: 11.08.15.

¹⁹⁸ Grand-Duché de Luxembourg (1993): Memorial Journal Officiel du Grand-Duché de Luxembourg. Recueil de législation No.70, 6 septembre 1993. Online: www.legilux.public.lu/leg/a/archives/1993/0070/a070.pdf#page=59. Accessed: 27.08.15.

¹⁹⁹ Eurochambres (2015): Transposition Study. Energy Audits for Europe. Assessment of the transposition of Article 8 of the Energy Efficiency Directive (2012/27/EU) into Member State legislation. Last update: 24 July 2015. Online: <http://www.eurochambres.eu/content/default.asp?PageID=1&DocID=7042>. Accessed: 07.08.2015.

have been established in 1996²⁰⁰ and a voluntary agreement on industrial energy efficiency was put in place, as well. An overview of these instruments is provided in Table 41 and they are further detailed below.

2.1.20.1. Energy audits

Mandatory energy audits for large companies: The national transposition of Article 8 is still under preparation and preliminary information could not be obtained within this study.

- **General definition:** No information available.
- **Scope:** No information on exemptions from the mandatory audits is available yet. In general, the target group for mandatory energy audits in Luxembourg is relatively small. An initial estimate indicates that between 100 and 150 enterprises in Luxembourg will be subject to the obligation to carry out an audit. The number of larger companies from the industrial sector is estimated at about 60. Most of these companies participate in the “Voluntary Agreement on improving energy efficiency in Luxembourg industry” (see below).¹⁹⁷
- **Exemptions:** No information available.
- **Deadlines:** No information available.
- **Multi-national companies:** No information available.
- **Multi-site companies:** No information available.
- **Minimum coverage:** No information available.
- **Penalties for non-compliance:** No information available.
- **Specific provisions for buildings:** No information available.
- **Specific provisions for transport:** No information available.
- **Monitoring:** No information available.

Mandatory energy audits for energy-intensive companies: The Luxembourg Law on the Rational Use of Energy¹⁹⁸, modified in 2000 by the Law on the Organisation of the Electricity Market,²⁰¹ addresses the production, transformation, distribution and utilisation of energy and aims to achieve energy savings and the rational use of energy in all sectors. In addition to provisions on buildings, the law also states requirements for commercial and industrial companies.²⁰² Accordingly, both types of enterprise, if they have an overall annual energy demand exceeding 3 GWh, are required to establish an energy balance and to regularly check on energy saving potential. Up-to-

²⁰⁰ Grand-Duché de Luxembourg (1996): Memorial Journal Officiel du Grand-Duché de Luxembourg. Recueil de législation No.67, 18 septembre 1996. Online: <http://www.legilux.public.lu/leg/a/archives/1996/0067/a067.pdf#page=1>. Accessed: 11.08.15.

²⁰¹ Grand-Duché de Luxembourg (2000): Memorial Journal Officiel du Grand-Duché de Luxembourg. Recueil de législation No.77, 21 août 2000. Online: <http://www.legilux.public.lu/leg/a/archives/2000/0079/a079.pdf#page=2>. Accessed: 27.08.15.

²⁰² Art. 11; Loi du 5 août 1993 concernant l'utilisation rationnelle de l'Énergie.

date information on the specific implementation, relevance and impact of this scheme on companies could not be identified.

Funding scheme for energy audits in energy-intensive companies: Since 1996 the Règlement Grand-Ducal du 11 août 1996 on Energy Audits in Residential and Tertiary Buildings as well as Companies²⁰⁰ (Règlement grand-ducal du 11 août 1996 concernant la réalisation d'audits énergétiques dans les bâtiments du secteur résidentiel et tertiaire, ainsi que dans les entreprises) has put in place a funding scheme for audits. The funding for energy audits may be provided to industrial, craft, agricultural and commercial enterprises exceeding an energy consumption of 3 GWh per year. These audits concern the electricity and heat consumption of production, including linked activities such as space heating and ventilation, provision of sanitary hot water, cooling and lighting and building/office equipment. The law also describes certain requirements related to the content of the audit and requirements for the auditors. If the audit meets the requirements, the Ministry could initially provide funding of up to 50% of its costs with a ceiling of up to approximately EUR 3,750 (LUF 150,000). This value was changed to 40% with a limit of EUR 30,000 in 2002.²⁰³ The funding can be provided once per applicant.²⁰⁰ No further information on the current impact and usage of this programme could be obtained.

2.1.20.2. Energy management systems

Voluntary agreement on industrial energy efficiency: A "Voluntary Agreement on improving energy efficiency in Luxembourg industry" was established between the Luxembourg Government and FEDIL, the Business Federation Luxembourg. This national voluntary agreement provides its participants with relief on their energy taxes (for electricity and gas). The current period of voluntary agreement runs from 2011 to the end of 2016 and brings together 56 medium and large industrial companies in Luxembourg, thus covering virtually all larger industrial companies in the country. The aim of this agreement is to improve energy efficiency by 7% as compared to the average level of 2009 and 2010. As part of the agreement, the participating companies have to introduce an energy management system. Using this system, they have to identify and evaluate the potential for energy efficiency improvements, e.g. through energy audits, and to establish an action plan. Enterprises that fail to meet the obligations – including annual reporting requirements – may be excluded from the agreement.¹⁹⁷ Access is open to any company which is a FEDIL member and which has a significant energy consumption.²⁰⁴

Next to the voluntary agreement, there are general support activities for SMEs in Luxembourg that might also cover activities related to energy management and energy audits, e. g. a funding programme for external advice in general.²⁰⁵ As these programmes do not specially address energy, they are not detailed here.

²⁰³ Grand-Duché de Luxembourg (2002): Memorial Journal Officiel du Grand-Duché de Luxembourg. Recueil de législation No.15, 18 février 2002. Online: <http://www.legilux.public.lu/leg/a/archives/2002/0015/a015.pdf#page=3>. Accessed: 27.08.15.

²⁰⁴ MyEnergy Luxembourg (2015): Accord volontaire Fedil. Online: <http://entreprises.myenergy.lu/grandes-entreprises-et-industries/accord-%20volontaire-fedil/>. Accessed: 11.08.15. The website specifies this consumption threshold as "category C for electricity or C2 for natural gas".

²⁰⁵ Le Gouvernement Du Grand-Duché de Luxembourg (2015): Beihilfe für Beratungsleistungen für KMU aus Handwerk und Handel. Online: <http://www.guichet.public.lu/entreprises/de/financement-aides/aides-artisanat-commerce/investissement-developpement-pme/aide-services-conseils/index.html>. Accessed: 27.08.2015.

Table 42: Summary for the implementation of Article 8 in Luxembourg.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Primary legislation still under preparation |
| | How are large enterprises defined? | <ul style="list-style-type: none"> No information available |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> No information available |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Mandatory scheme for the implementation of energy-intensive companies (demand > 3GWh/year) in place Funding scheme for energy audits in place for energy-intensive companies Voluntary agreement on energy management systems in place |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> No information available |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No information available |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> No information available |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> No information available |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Mandatory audits, funding schemes and voluntary agreements are based on energy consumption thresholds and could thus also include SMEs |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> See above (delimitation of current instruments is based on energy threshold) |
| Management | What schemes have been introduced to help implementation management systems? | <ul style="list-style-type: none"> See above (delimitation of current instruments is based on energy threshold) |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> No information available |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No information available |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No information available |

2.1.20.3. Exchange mechanisms

No specific exchange mechanisms could be identified for Luxembourg.

2.1.20.4. Further implementation plan

With the implementation of primary legislation transposing the EED in Luxembourg more details will also be available on the implementation of Article 8. A summary of the current framework in Luxembourg is provided in Table 42.

2.1.21. Malta

In order to foster the implementation of energy audits and energy management systems in industry, Malta currently undertakes different approaches for non-SMEs and SMEs to comply with Article 8 of the EED. As a first step, Malta formalised the procedure planned to implement different instruments to support the implementation of energy audits and management systems in its third NEEAP.²⁰⁶ On this basis, the Maltese government started to intensively work on the implementation of these instruments, which are already partly in force. The different approaches taken are described in detail in the following section.

The official body responsible for the overall implementation of the third NEEAP including the national implementation of Article 8 in Malta is the Ministry for Energy and Health. In addition, the following institutions are currently involved in the national implementation process:

- Malta Enterprise - the national development agency - is also responsible for the industry sector, and the Malta Tourism Authority which is responsible for the tourism industry. Both institutions are involved in implementation of supporting schemes in terms of energy efficiency for the industry and commerce sector which also includes energy audits.
- Transport Malta, which is responsible for corresponding schemes relevant for the transport sector.²⁰⁷
- The coordination, enforcement and supervision of the implementation of energy audits for non-SMEs lie with the Sustainable Energy and Water Conservation Unit (SEWCU) at the Ministry for Energy and Health with support from the Malta Resources Authority.²⁰⁸

Regarding policy instruments aimed at fostering the implementation of energy audits and energy management systems, besides the legal obligation on non-SMEs to implement energy audits, there are also some promotion schemes for SMEs. Table 43 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Malta. These instruments are further detailed below.

2.1.21.1. Energy audits

Generally the Maltese government seeks to promote energy audits to all final customers. Article 10 (1) Energy Efficiency and Cogeneration Regulations 2014 states that

²⁰⁶ Ministry for Energy and Health (2014): MALTA's NATIONAL ENERGY EFFICIENCY ACTION PLAN (NEEAP). https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_malta.pdf. Accessed: 02.09.2015.

²⁰⁷ The Ministry for Energy and/or the Malta Resources Authority (the energy regulator) are responsible for the implementation of schemes for households. (Source: third NEEAP)

²⁰⁸ Ministry for Energy and Health (2015): Guidance Note on the carrying out of mandatory energy audits by non-SMEs pursuant to LN 196/2014 transposing the energy efficiency Directive 2009/27/EU. Online: <http://energy.gov.mt/en/Documents/Non%20SMEs%20Guidance%20Note%20Amended%20version1.2.pdf>. Accessed: 10.09.2015.

“the Minister shall promote the availability to all final customers of high quality energy audits which are cost-effective”.²⁰⁹ Prior to the entry into force of the relevant regulations, energy audits were not mandatory for any type of enterprise. This is the reason why Malta’s third NEEAP stated that no official centralised and comprehensive records or standards for energy audits were available at the time (except for those supported by the Government, which will be described below).²⁰⁶ Since then, the Malta Resources Authority (MRA) started holding a register of approved training courses leading to the certification of energy auditors as well as a list of certified energy auditors. SEWCU is currently making the necessary preparations to maintain records of energy audits submitted in compliance with LN196/2014. Furthermore, SEWCU is in the process of issuing a tender for the provision of services for an independent quality control system for energy audits submitted in compliance with regulation 10 of LN 196/2014. The main objective is that of assuring and checking the quality of energy audits conducted by non-SMEs. The different actions taken by several Maltese institutions to foster the implementation of energy audits are described below.

Table 43: Overview of instruments in Malta.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|------------------|------------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Malta Enterprise Scheme | | • | • | • | | | | • | |
| ERDF Scheme | (•) ¹ | (•) ¹ | (•) ¹ | (•) ¹ | | | | (•) ¹ | |
| (Programme from MHRA) | (•) ² | (•) ² | (•) ² | | | | (•) ² | | |
| (•) ¹ : currently no applications accepted, new scheme under preparation (•) ² : programme currently under preparation | | | | | | | | | |

Mandatory audits for large enterprises (Legal Notice 196/2014 Energy Efficiency and Cogeneration Regulations 2014): The national law which transposes Article 8 is Legal Notice 196/2014 Energy Efficiency and Cogeneration Regulations 2014 pursuant to the Malta Resources Authority Act (Cap. 423) and the Building Regulation Act (Cap. 513). With regard to large companies, Article 10 (9) Energy Efficiency and Cogeneration Regulations 2014 indicates that “enterprises that are not SMEs shall commission an energy audit carried out in an independent and cost-effective manner [...] by 5 December 2015 and at least every four years from the date of the previous energy audit.” To aid the interpretation of this Article, the Maltese government published a Guidance Note on the carrying out of mandatory energy audits by non-SMEs pursuant to the Legal Notice 196/2014, which is the basis of the following description. In order to support companies regarding the interpretation of the Guidance Note, SEWCU and/or MRA are available for any questions. Requests for clarifications will be answered within two weeks. However, pending clarifications will not be accepted as a

²⁰⁹ Ministry for Justice, Culture and Local Government (2014): ENERGY EFFICIENCY AND COGENERATION REGULATIONS. <http://www.justiceservices.gov.mt/DownloadDocument.aspx?app=lom&itemid=10690>. Accessed: 02.09.2015.

valid reason for non-compliance with the deadline.²¹⁰

- **General definition:** In terms of the definition of large enterprises the aforementioned Guidance Note directly adopts the definition set by the EED. Therefore a large company is defined as a company which (a) has at least 250 employees or (b) employs fewer than 250 people but has an annual turnover of more than EUR 50m and an annual balance sheet total of EUR 43m or (c) is part of a corporate group which meets the above criteria. With regard to the reference period which forms the basis for the calculation of the qualification criteria (employees and financial threshold), the Guidance Note published by the Ministry states that these figures must be based on the last audited annual accounts. In the case of companies that are categorised as SMEs, and which at a later time may comply with the Article 8 criteria for non-SMEs, these non-SMEs will also become obliged to conduct an energy audit within two years from when the company falls within the category of non-SME.²¹⁰
- **Scope:** Companies whose total annual energy consumption is below 50,000 kWh are exempted. Furthermore the Guidance Note provides the following exemptions: a) Those parts of the enterprise – e.g. building envelope/s – that are already covered by other statutory audits such as certification and/or inspections under the Energy Performance of Buildings Directive; b) Those parts of the process covered by other certification schemes so long as these schemes are equivalent in standard to those in the LN (Legal Notice); c) Vessels of less than 5,000 gross tons, provided that these represent less than 10% of total energy consumption; d) Building and civil engineering projects in construction.²¹⁰ Maltese industry is mainly dominated by micro-enterprises with a total number of approximately 61,880 entities, equalling a share of 96.9% of the whole industry. There are 81 entities (0.56%) employing 250 persons or above (all numbers relate to the year 2010 from the National Office of Statistics), which will be covered by the obligation for the implementation of energy audits.²⁰⁶ 52 non-SMEs have already introduced an ISO 50001 energy management system that is compliant with the obligation to implement an energy audit by 5 December 2015. Energy audits standardised according to EN 16247 have not yet been implemented by large companies.²¹¹
- **Exemptions:** In cases where a large company has already implemented an energy or environmental management system in line with ISO 50001 or ISO 14001, this company will be compliant with the obligation to conduct an energy audit in Malta. Therefore the company has to provide proof that the implemented system entirely meets the requirements of Article 8.²¹¹
- **Deadlines:** If a company implements an energy audit for the first time, this has to be fulfilled by 5 December 2015. In cases where a company has already implemented an energy audit since 4 December 2013, this will be considered as compliant with Article 8. Audits in Malta also have to be performed every four years after the date of the previous audit.²¹⁰
- **Multi-national companies:** Companies which are part of a corporate group are also covered by the regulation to implement an energy audit. Energy audits are mandatory for non-SMEs registered and doing business in Malta; this also refers to

²¹⁰ Ministry for Energy and Health (2015): Guidance Note on the carrying out of mandatory energy audits by non-SMEs pursuant to LN 196/2014 transposing the energy efficiency Directive 2009/27/EU. Online: <http://energy.gov.mt/en/Documents/Non%20SMEs%20Guidance%20Note%20Amended%20version1.2.pdf>. Accessed: 10.09.2015.

²¹¹ Personal communication by Mr. Charles Buttigieg, (Ministry for Energy and Health) of 02.06.2015.

subsidiaries of large companies in Malta and Maltese subsidiaries of large foreign companies²¹²

- **Multi-site companies:** To comply with the regulation to conduct an energy audit, obligated companies are allowed to adopt a sampling method for similar operations and/or buildings. Therefore, it is acceptable to identify a statistically significant sample that is sufficiently similar in size, construction and operations. The respective company is requested to explain and justify the sampling method in its audit report.²¹⁰
- **Minimum coverage:** Malta directly adopts the minimum criteria from the EED without any adjustments. Thus, according to the Guidance Note from the Ministry for Energy and Health energy audits shall be “[...] proportionate and sufficiently representative to permit the drawing of a reliable picture of overall energy performance and the reliable identification of the most significant opportunities for improvement.” Additionally, SEWCU requires an assessment of communally used heating or cooling system based on chillers/heat pumps, possibly accompanied by a building energy management system. Furthermore, companies must examine to what extent they can use combined heat and power technology.²¹⁰
- **Penalties for non-compliance:** Article 25 of the Energy Efficiency and Cogeneration Regulations 2014 states that any person who is not fulfilling the obligation to conduct an energy audit “[...] shall be guilty of an offence against these regulations and shall, on conviction, be liable to a fine (multa) of not more than sixty-nine thousand and eight hundred and eighty-one euro and twenty cents (EUR 69,881.20), or to one thousand and three hundred and ninety-seven euro and sixty-two cents (EUR 1,397.62) for each day during which the offence persists.”
- **Specific provisions for buildings:** There are no specific provisions for buildings, except the general specification that the energy audit shall include a detailed review of the energy consumption profile of buildings. Furthermore, an assessment of any communally used heating or cooling systems based on chillers/heat pumps must be carried out (see above ‘minimum coverage’).²¹⁰
- **Specific provisions for transport:** For transport there are not any detailed provisions, except the requirement to include transportation within the energy audit.²¹⁰
- **Monitoring:** With regard to the monitoring of audits implemented by companies, Article 10 (1) of the Energy Efficiency and Cogeneration Regulations 2014 states further that “[...] the Minister shall have put in place a scheme to assure and check their quality, including, if appropriate, an annual random selection of at least a statistically significant percentage of all the energy audits they carry out.” Companies are requested to submit a copy of their audit report (or a summary document) to SEWCU within two weeks following the due date for completion of the report. All reports will be shared with MRA.²¹⁰ The SEWCU within the Ministry for En-

²¹² “The New SME definition – User Guides and model declaration’ published by the European Commission shall be used as a general guide to interpret the definition and to determine how to treat particular relationships of the enterprise with other enterprises or investors when calculating the enterprise’s staff and financial figures for comparison with the established thresholds.” see Guidance Note on the carrying out of mandatory energy audits by non-SMEs pursuant to LN 196/2014 transposing the energy efficiency Directive 2009/27/EU. Online: <http://energy.gov.mt/en/Documents/Non%20SMEs%20Guidance%20Note%20Amended%20version1.2.pdf>. Accessed: 10.09.2015.

ergy and Health is in the process of issuing a tender for the provision of a service for an independent quality control system for energy audits submitted in compliance with regulation 10 of L.N. 196/2014. The main objective is that of assuring and checking the quality and ensuring the independence of energy audits conducted in non-SMEs.²¹¹

Malta Enterprise Scheme: Energy audits in SMEs are co-financed by the Maltese Enterprise Scheme, which is financed by national funds. The implementation of this instrument is covered by Malta Enterprise, which is the national development agency also responsible for industry.

ERDF Energy Grant Scheme (organised by Malta Enterprise):²¹³ This programme ran during the period from 2007 to 2013, and is not accepting further applications at the moment.²¹⁴ Apart from large establishments that rely on energy Management Systems to achieve energy efficiency, only a small number of high quality energy audits were carried out in the smaller establishments through an ERDF scheme.²⁰⁶ A new scheme is planned under the new EU Funding Period 2014-2010.²¹¹

Programme from MHRA (Malta Hotels and Restaurants Association): Following the launch of the EU Life + Invest in Water programme, the Malta Business Bureau (MBB) representing the Malta Hotels and Restaurants Association (MHRA) and the Malta Chamber of Commerce, Enterprise and Industry plans to submit an application under LIFE targeting energy in industry. The LIFE+ Project Energy Efficiency for industry in Malta will aim to identify and disseminate energy efficiency best practice information for the members of MBB, Malta Chamber and MHRA. The project will achieve this by working closely with both SMEs and non-SMEs. This will be done through energy audits and the development of Energy Savings and Energy Efficiency Plans. Best practice implementation for energy efficiency will then be disseminated to as wide an audience as possible amongst the businesses in Malta, with enterprises provided with technical support to facilitate the implementation of energy efficiency measures. The project's specific objectives are to increase awareness of industry and other businesses in Malta regarding Malta's obligations under the EED as well as the EU's energy efficiency drive, about climate change and its forecast impacts on Malta, and increase best practice implementation resulting in reduced energy consumption of industry in Malta.²¹¹

2.1.21.2. Energy management systems

Currently no scheme is available relating to energy management systems.

²¹³ For a list of beneficiaries and shares of funding see http://www.maltaenterprise.com/sites/default/files/support_measures/list_of_beneficiaries_14-05-2015.pdf. Accessed: 09.06.2015.

²¹⁴ For an overview about the programme see <http://www.maltaenterprise.com/en/support/erdf-energy-grant-scheme>. Accessed: 09.06.2015.

Table 44: Summary for the implementation of Article 8 in Malta.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> EED has been transposed in the national law "Legal Notice 196/2014 Energy Efficiency and Cogeneration Regulations 2014" |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Maltese Guidance Note directly adopts the definition set by the EED |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Companies as part of a corporate group are also covered by the regulation |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> SEWCU is in discussions with stakeholders such as associations representing non-SMEs to assist with the implementation of energy audits |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Companies which already implemented an energy or environmental management system (EN ISO 50001; EN ISO 140001) may request exemption; further exemptions outlined in Guidance Note |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> A number of enterprises already adhere to ISO standardisation or other form of standard; figures given in the NEEAP to be updated once the energy audits are forwarded to SEWCU |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Article 10 (1) Energy Efficiency and Cogeneration Regulations 2014 defines process; system is being set up and a tender will be issued for the provision of services for an independent quality control system for energy audits |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Fine (multa) of not more than 69,881.20, or 1,397.62 for each day during which the offence persists |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Discussion between the representative of the stakeholders and the SEWCU have started in August 2014 and served to build a favourable framework for the implementation of the obligatory audits by the non-SMEs and extension of the energy audit programme to SMEs As regards further targeted information this is work in progress |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Representatives of companies (sectors) and ministries (among others chamber of commerce) currently cooperate to develop instruments targeted at SMEs; energy audits may be eligible in an Energy Efficiency improvement exercise covered in an upcoming Financial Scheme funded by the ERDF and/or National Funds |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Currently no scheme available |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Malta Enterprise and GRTU (Maltese Chamber for SMEs) seem to be key actors as one information channel for SMEs |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Malta Enterprise did a conference to launch the scheme Certify This is an aspect which the respective institutions still work on for example as trying to agglomerate a number of SMEs and non-SMEs under one Energy Management Scheme |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> SEWCU and Malta Resources Authority prepared framework for private institutions to deliver special training for technical personnel on the energy management systems in accordance with ISO 50001; targeted information is a work in progress |

2.1.21.3. Exchange mechanisms

In Malta there are currently no exchange mechanisms targeting the implementation of energy audits. Nevertheless, the Ministry is striving for a direct exchange of information with companies. In December 2014 there was a conference entitled “Non-SMEs and the Energy Efficiency Directive: Obligations and Opportunities” directed at large companies in order to inform them about the obligation and opportunities resulting from this. Furthermore, the ministry provides non-SMEs with assistance if there is a need for clarifications on the interpretation of the requirements resulting from Legal Notice 196/2014.²¹⁰

Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Malta is provided in Table 44. Malta announced in its third NEEAP that it will implement new measures to promote energy audits and systematically maximise the benefits of these. This includes the SEWCU setting up a centralised database of energy audit data at the Ministry for Energy and Health. This system aims to support the monitoring of the implementation of energy audits and also to generate a database for the implementation of schemes to incentivise the implementation of the most cost-effective measures. The third NEEAP specified the collection of the following data as a minimum standard for large enterprises: whether the audit is compliant with Annex VI of the EED; date of the audit; audits and their accreditation plus standard; recommendations arising out of the audit; whether any energy and/or environmental management systems is implemented; or whether any exemption from the obligation is granted to the large company.

Malta states in its third NEEAP that the policy framework does currently not address SMEs’ needs sufficiently. Thus, initiatives in favour of these companies may be extended. The Ministry for Energy and Health is working with stakeholders such as the General Retailer and Traders Union (GRTU) and the Chamber of Commerce, Enterprise and Industry, the Malta Hotels and Restaurants Association and the Malta Business Bureau in order to support the implementation of energy audits and to fill information gaps with regard to energy efficiency in the commercial and industrial sectors with specific attention to Micro- Enterprises, SMEs, agriculture and rural operators.²¹¹

2.1.22. Netherlands

As set out in the third Dutch National Energy Efficiency Action Plan²¹⁵, the Ministry of Infrastructure and Environment implemented the Environmental Management Act (IENM / BSK-2015/103340) designed specifically to fully transpose Article 8 of the EED into national legislation on 10 July 2015.²¹⁶

The Ministry for Economic Affairs is responsible for monitoring compliance with the Environmental Management Act regulations, however, much of the responsibility for implementing and supporting audits in the Netherlands is taken at the local authority

²¹⁵ Ministry of Economic Affairs, Ministry of the Interior and Kingdom Relations and Ministry of Infrastructure and the Environment (2014): Third national Energy Efficiency Action Plan for the Netherlands 2014. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_netherlands.pdf. Accessed: 20/10/2015.

²¹⁶ Minister of Infrastructure and Environment (2015): Environmental Management Act, IENM/BSK-2015/103340. Online: <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/regelingen/2015/06/09/ontwerp-tijdelijke-regeling-implementatie-artikelen-8-en-14-richtlijn-energie-efficientie/ontwerp-tijdelijke-regeling-implementatie-artikelen-8-en-14-richtlijn-energie-efficientie.pdf>. Accessed: 20/10/2015.

level and by the Netherlands Enterprise Agency (RvO). This includes monitoring the quality of audits as well as issuing penalties, including fines, for non-compliance.

Companies already participating in one of the Netherlands' two voluntary agreement schemes do not have to take further action to comply with the new regulations. The voluntary agreement schemes are the LTA3 (Long-Term Agreement 3, in Dutch Meerjarenafspraak or MJA)²¹⁷ and the Long-Term Agreement for the energy efficiency of ETS enterprises (MEE)²¹⁸. Approximately 1,100 companies already use these schemes, and this accounts for up to 80% of the energy used by industry, and about 25% of the energy in the Netherlands²¹⁹. The agreements specify that the participating organisations must draw up energy efficiency plans every four years and implement cost-effective energy reduction measures for the plans. Companies then have to report annually on the measures that have been implemented. These reports are evaluated by the Netherlands Enterprise Agency. MEE is only available for companies in the ETS²²⁰. Table 45 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in the Netherlands. These instruments are further detailed below.

Table 45: Overview of instruments in the Netherlands.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Long Term Agreements (LTA3 or MJA)/Long Term Agreement energy efficiency ETS companies (MEE) | • | • | • | | | | • | | |

2.1.22.1. Audits

Mandatory energy audits (Environmental Management Act (IENM/BSK-2015/103340))²¹⁹: The Dutch Government ratified new legislation on 10 July 2015 specifically to ensure that Article 8 of the EED was transposed fully into national legislation. This legislation makes reference to the EED Annex VI minimum requirements for energy audits. It also requires that each audit has a corresponding report that cap-

²¹⁷ Ministry of Economic Affairs (2008): LTA3 Long-Term Agreement on Energy efficiency 2001-2020 . Online: <https://www.rvo.nl/sites/default/files/bijlagen/LTA3%20convenanttekst%20-%2013%20juni%202008.pdf>. Accessed: 20/10/15.

²¹⁸ ODYSSEE – MURE, Energy Efficiency Policies and Measures in the Netherlands, monitoring of EU and national energy efficiency targets (2012). Online: <http://www.odyssee-mure.eu/publications/national-reports/energy-efficiency-netherlands.pdf>. Accessed: 20/10/15.

²¹⁹ Minister of Infrastructure and Environment (2015): Environmental Management Act, IENM/BSK-2015/103340. Online: <https://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/regelingen/2015/06/09/ontwerp-tijdelijke-regeling-implementatie-artikelen-8-en-14-richtlijn-energie-efficientie/ontwerp-tijdelijke-regeling-implementatie-artikelen-8-en-14-richtlijn-energie-efficientie.pdf>. See Comments Section 3. Accessed: 20/10/2015.

²²⁰ Personal communication by Mr. Martijn Verdonk (Ministry Of Economic Affairs) of 27.09.2015.

tures the energy flows of an organisation. The legislation also goes further to require that the audit report includes any energy conversions and descriptions of major internal and external factors that influence positive and negative energy consumption by the company.²²⁰ The legislation is, however, temporary with the intention to finally implement the same requirements through a revision to the Environmental Law Decree.²¹⁹ Some guidance and frequently asked questions have been provided to help organisations understand the requirements of the new regulations²²¹.

- **General definition:** Under the latest legislation a large organisation is defined as an enterprise with 250 or more employees, with an annual turnover of EUR 50m or more and/or an annual balance sheet of more than EUR 43m.
- **Scope:** Companies that have a Long Term Energy Efficiency Agreement (LTA3) or Long Term Energy Efficiency Agreement for ETS businesses (MEE) are exempt from having to undertake an energy audit.²¹⁹ There are also some exemptions for the transport aspect of the energy audit, if the organisation is part of a transport programme.²²⁰ There are approximately 3,000 organisations that will be covered by the legislation. The Netherlands has a long track record of energy saving culture within business through its voluntary programmes. It therefore does not expect a high additional impact from the new legislation because energy auditing is already well established. The impact will therefore be the greatest for those organisations that have not joined the voluntary schemes to date. In this sense the EU legislation is seen very positively in the Netherlands.²²⁰
- **Exemptions:** An organisation is exempt from the mandatory audit requirement if it has in place an international standard Energy Management System (e.g. ISO 50001 or ISO14001 with additional module ISO14051) that includes audits which meet the minimum criteria of Annex VI of the EED.²²¹ Furthermore, if a company has conducted an energy audit to the standard outlined in Annex VI of the EED after 5 December 2011 then they are not required to conduct any further audit before 5 December 2015. There are approximately 1,000 companies that meet these criteria, from a group of approximately 3,000 organisations that meet the qualification criteria to require an audit. The final numbers are still being established by RvO.
- **Deadlines:** The Dutch legislation has transposed the EED deadline of 5 December 2015 for organisations to become compliant with the energy audit regulations either through completion of an energy audit or implementation of alternative systems (e.g. ISO 50001).²²¹
- **Multi-national companies:** The Dutch legislation considers only operations that are based in the Netherlands. A company that has multiple operations in the Netherlands must consider the combined total number of employees, turnover and balance sheet of all activities to determine if the regulations apply. If the parent organisation is based outside of the national territory then the combined Dutch operations must be considered against the regulations. If there are operations of a Dutch national organisation overseas then the legislation does not require audits of these operations.²²¹ If an overseas organisation has operations in the Netherlands and already has an established audit process in place, this process will be valid if it

²²¹ Netherland Enterprise Agency (2015): Frequently Asked Questions and answers to the audit requirement of the EED Online:
<http://www.rvo.nl/sites/default/files/2015/09/Veel%20gestelde%20vragen%20en%20antwoorden%20bij%20de%20auditverplichting%20van%20de%20EED%20-%20versie%20september%202015.pdf>. Accessed: 20/10/2015.

meets the local authority's criteria. This criteria is sufficient to meet the EED Article 8 and Annex VI.²²⁰

- **Multi-site companies:** For multi-site companies, all sites based in the Netherlands are subject to the regulations. There is no lower limit on the size of the site or its energy use.²²¹
- **Minimum coverage:** At the time of writing, no information was available for minimum coverage requirements in the Netherlands.
- **Penalties for non-compliance:** The penalties for non-compliance will be determined by RvO in accordance with the national enforcement strategy and could result in fines but no specific level is currently identified.^{222,221}
- **Specific provisions for buildings:** There are no specific provisions for buildings.
- **Specific provisions for transport:** There are no specific provisions for transport operations, however some exemptions may apply to companies that are part of a transport programme.²²⁰
- **Monitoring:** Under the latest Environmental Management Act, the Netherlands Enterprise Agency (RvO) is responsible for monitoring compliance with the regulations. RvO has a strong local presence through local authorities. Much of the responsibility for implementing and supporting audits in the Netherlands is taken at the local authority level. This includes monitoring the quality of audits as well as issuing penalties, including fines, for non-compliance. All audit reports must be submitted to the local authority, which will check and assess the quality of each. Reports must include an overview of all existing energy flows within an organisation, including energy conversions and profiles. It must also contain information on the major factors affecting energy use and a description of cost effective energy saving measures that could be implemented over the next four years. These reports must be submitted to the local authority within four weeks of completion. The submitted reports will be checked by the local authority to ensure they meet the requirements set out by the RvO. The reports will then be passed to the RvO which will collate them. The RvO will only check the total number of audits and will not undertake any qualitative assessment.²¹⁹

The Netherlands Chamber of Commerce is involved in two regional energy efficiency programmes, which are aimed at matching supply and demand. Support is offered to SMEs to develop and sell demand-orientated energy efficiency measures to householders. This support is provided through workshops, as well as offering specific advice to individual SMEs. The projects are Slim Energie Thuis! (operating in the eastern Province of Overijssel)²²³ and BIK (Bouwen aan Integrale Ketensamenwerking)²²⁴, which operates in the Province of North-Holland.

Long Term Agreements (LTA3 or MJA)/Long Term Agreement energy efficiency ETS companies (MEE): The voluntary agreement scheme LTA3 runs until 2020 and covers a range of company sizes, including small and medium sized industrial companies. Both this scheme and MEE cover a range of industry sectors and sub-

²²² Ministry of Infrastructure and the Environment (2014): National Enforcement Strategy. Online: <http://www.infomil.nl/onderwerpen/integrale/handhaving/landelijke/introductie/>. Accessed: 20/10/2015.

²²³ Slim Energie Thuis (2015): Programme Website. Online: <http://slimenergiethuis.nl/>. Accessed: 20/10/2015.

²²⁴ BIK (2015): Programme Website. Online: <http://www.kvk.nl/groeikansen/bik/>. Accessed: 20/10/2015.

sectors. Around 1,100 companies have Long term agreements with a large proportion of Dutch ETS companies participating in the MEE. Under both schemes companies are obliged to develop energy-efficiency plans, to implement these plans and to report on the results. The participating sectors within LTA3 will start a pre-study to a “roadmap” devoted to obtain an energy efficiency improvement of 50% in 2030, which has already started. Based on these pre-studies it will be decided for which sectors the roadmap will be developed. In return for signing an LTA, a company is more likely to be granted the environmental permit that it needs to operate. This permit will incorporate the required energy efficiency improvement. The local authorities that enforce these permits have also committed themselves to providing an equivalent alternative to LTAs for companies that do not sign up.²¹⁸

2.1.22.2. Energy management systems

The LTA3 programme requires participants to establish an energy management system within three years of signing an agreement.²²⁵ Companies are required to implement a system of their choice, however ISO50001 is recommended as a basis. RvO provides guidelines and action plan examples for participants. For participants in the MEE programme energy management systems are not mandatory.

There is no further support for implementation of energy management systems. The focus in the Netherlands is on the outcome of the audit report. There are active consultancies that also support business compliance with the regulation in the Netherlands but neither they, nor the organisations they serve, receive any direct government funding.²²⁰

2.1.22.3. Exchange mechanisms

RvO has a strong local presence offering support and is also present in industrial clusters. It also provides a telephone and email helpdesk to support organisations in implementing audits.

2.1.22.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in the Netherlands is provided in Table 46. A centre of excellence for energy efficiency is currently being established in the Netherlands. The centre expects to run some pilots towards the end of 2015 and then become fully operational after this.²²⁰

The Environmental Management Act (IENM/BSK-2015/103340) is temporary and the Dutch Government intends to finally implement the same requirements through a revision to the Environmental Law Decree.²¹⁹

²²⁵ Netherland Enterprise Agency (2015): Energy Management (MJA/MEE). Online: <http://www.rvo.nl/subsidies-regelingen/energiemanagement-mja/mee>. Accessed: 20/10/2015.

Table 46: Summary for the implementation of Article 8 in the Netherlands.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Regulation of the Minister of Infrastructure and Environment no. IENM / BSK-2015/103340 on 10 July 2015 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> An enterprise with 250 or more employees, with an annual turnover of EUR 50m or more and / or an annual balance sheet of more than EU 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> The Dutch legislation only applies to operations that are based in the Netherlands. However, the combined operations of a company in the Netherlands must be used to assess need to comply |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> There is a strong culture of energy saving in the Netherlands with several existing schemes. The legislation acts as an update to these existing schemes; no additional promotion is evident |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Exemptions are granted for organisations in the existing schemes (LTA3 and MEE) and for participation in transport energy saving programmes |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Around 1,100 organisations are expected to be exempt from the new regulations due to established practices and participation in existing voluntary energy savings programmes, which include undertaking energy audits |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Local authorities and RvO will monitor compliance. Audit reports will be submitted to these organisations for quality checking and monitoring of implementation. The reports must include details on energy use, profiles and cost effect opportunities for energy efficiency improvements |
| | What kinds of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Local authorities have been authorised to impose administrative and financial penalties for non-compliance; penalties will be set in line with the National Enforcement Strategy |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> SMEs are covered by the voluntary agreement LTA3 |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Green deal scheme to help SMEs reduce energy consumption and begin generating their own energy |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> SMEs are covered by the voluntary agreement LTA3 which includes a mandatory requirement to implement an energy management system |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Dutch Chambers of Commerce engage with SMEs through two regional programmes offering energy efficiency advice and support |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> RvO works with local authorities to ensure energy management information is available to SMEs |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> RvO, local authorities and regional programmes that engage the Chambers of commerce |

2.1.23. Poland

The most recent communication related to the EED in Poland is the NEEAP submitted in 2014 to the European Commission by the Polish Ministry of Economy.²²⁶ With regard to recent instruments in the field of energy efficiency policy, in 2011 Poland introduced an energy efficiency obligation scheme running from 2013 to 2016 which also promotes energy audits.²²⁷ The corresponding law, the Act on Energy Efficiency²²⁸, obliges energy companies selling electricity, heat or natural gas, to end users connected to the network on the territory of the Republic of Poland, to acquire an appropriate number of energy efficiency certificates, called White Certificates.²²⁶ White certificates are granted for energy efficiency projects that were successful in a competition organised by President of Energy Regulatory Office (ERO). The project owner or the delegated entity who would like to submit the project to the competition must have carried out an energy efficiency audit.²²⁹ So far, in total 1,430 offers (each with an energy audit) were submitted within the three tenders carried out.²³⁰ Table 47 provides an overview of the instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Poland. These instruments are further detailed below.

Table 47: Overview of instruments in Poland.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|------------------|------------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (●) ¹ | | (●) ¹ | | | (●) ¹ | | | |
| Energy/electricity supply audit of an enterprise | • | (●) ² | • | | | | | • | |

(●)¹: national legislation is not in force yet
(●)²: companies with an energy consumption > 20 GWh per year

2.1.23.1. Audits

Mandatory energy audit (draft Act on Energy Efficiency): Poland has not yet transposed the obligation to conduct energy audits for large companies resulting from Article 8 of the EED into national legislation. A draft Act is currently under preparation and

²²⁶ Ministry of Economy (2014): National Energy Efficiency Action Plan for Poland 2014. https://ec.europa.eu/energy/sites/ener/files/documents/NEEAP_Poland_ENG_2014_ENER-2014-1003-0-0-EN-TRA-0.pdf. Accessed: 13.08.2015.

²²⁷ According to the NEEAP from 2014 the amendment of the Act on Energy Efficiency will extend the time period to 2020. (see also Ministry of Economy (2014): National Energy Efficiency Action Plan for Poland 2014. https://ec.europa.eu/energy/sites/ener/files/documents/NEEAP_Poland_ENG_2014_ENER-2014-1003-0-0-EN-TRA-0.pdf. Accessed: 13.08.2015.)

²²⁸ Act of 15 April 2011 on Energy Efficiency (Journal of Laws No 94, item 551 and of 2012 items 951, 1203, and 1397)

²²⁹ For the database as an overview about the energy audits already carried out see: <http://bip.ure.gov.pl/bip/efektywnosc-energetyczn/swiadectwa-efektywnosci/wydane-swiadectwa-efekt?page=19>. Accessed: 15.09.2015.

²³⁰ Personal communication by the Energy Efficiency Unit of the Energy Department (Ministry of Economy) of 11.09.2015.

is still pending approval from the Government. Therefore, the following description of the general framework conditions regarding this law is based on the preliminary information currently available. In accordance with the draft Act on Energy Efficiency, companies as defined by Act of 2 July 2004 on the Freedom of Economic Activity (Journal of Laws of 2013 item 672) are obliged to carry out an energy audit every four years, or have to have such an audit performed.²³⁰

- **General definition:** According to the third NEEAP and also to the draft Act on Energy Efficiency large companies will be defined as companies which (a) employ at least 250 employees OR (b) have an annual turnover exceeding EUR 50m and/or a balance sheet exceeding EUR 43m. Those companies that are considered as SMEs in the meaning of Articles 104 to 106 of this Act are exempted.²²⁶ This draft definition is in line with the definition for large companies set by the European Commission.
- **Scope:** No information on exemptions from the mandatory audits is available at the current time. Poland estimates that approximately 2,600 large companies will be covered by the regulation.
- **Exemptions:** To fulfil the obligation it is also possible for large companies to conduct an energy audit within the implementation of an energy or environmental management system in compliance with the relevant international or European standards (ISO 50001, ISO 14001 or EMAS).²³⁰
- **Deadlines:** The first audit should be carried not later than six months after the act will enter into force and afterward every four years.
- **Multi-national companies:** As the national legislation transposing Article 8 is not in force yet, there is no information available regarding the consideration of multi-national companies.
- **Multi-site companies:** As the national legislation transposing Article 8 is not in force yet, there is no information available regarding the consideration of multi-site companies.
- **Minimum coverage:** No information is available at the current time. This subject is being discussed at present, but at this stage an exclusion, e.g. of a certain amount of energy consumption of the audit, has not been agreed.
- **Penalties for non-compliance:** Penalties for not submitting an energy audit are foreseen to be based on turnover of the company.²³⁰
- **Specific provisions for buildings:** The energy audit of a building should be carried out by the owner of this building. In the case of a rented building the landlord is responsible for conducting an energy audit.²³⁰
- **Specific provisions for transport:** Art 27 of the draft Act on Energy Efficiency specifies refers to Annex VI of the EED specifying that buildings, industrial installations and transportation also have to be considered in the energy audit. But there are no further specifications in Poland at the current time.²³⁰
- **Monitoring:** Companies should notify the President of the Energy Regulatory Office (ERO) of energy audits undertaken within 30 days of the completion of the audit. The notification must be accompanied by information regarding opportunities for energy savings identified by the energy audit. Based on this information the

President of the ERO is required to inform the Minister responsible for economic affairs by 31 January of each year of the following: (1) the number of companies that conducted an energy audit and the number of companies that have alternatively implemented an energy or environmental management system and (2) the identified measures to achieve energy savings resulting from the conducted energy audits.²³⁰

Energy/electricity supply audit of an enterprise: The main aim of this instrument is to promote energy audits and to support investment in energy efficiency measures identified. The responsible institution for this programme is the National Fund for Environmental Protection and Water Management (NFEP&WM), which defines the framework conditions and conducts the competition. In past years energy audits have been financed by a subsidy of 70% of the eligible costs (taking into consideration the “de minimis” limitation). The reimbursement takes place after an expert from NFEP&WM has confirmed that the energy audit was conducted. Afterwards the investor will receive a loan for the investment identified by the energy audit. Within the first period NFEP&WM funded a total sum of approximately EUR 1.2m (PLN 5m) in the form of grants/subsidies to carry out an energy audit and additional EUR 38.3m (PLN 162,206,600) in the form of loans. The grants for energy audits will be awarded to companies with average annual energy consumption above 20 GWh.

2.1.23.2. Energy management systems

There were no instruments identified which specifically promote the implementation of energy management systems.

2.1.23.3. Exchange mechanisms

There are currently no exchange mechanisms in Poland that correspond to the definition applied in this study. However, the Polish-Japanese Energy Conservation Technology Centre (PJCEE), an advisory and training centre started in 2005, promotes, initiates and advises on the implementation process of energy management systems. The centre operates at the Krajowa Agencja Poszanowanie Energii (KAPE S.A. Polish National Energy Conservation Agency), which organises, for persons involved in energy management and for managerial staff of enterprises, cyclical training sessions to increase the competences of auditors.

2.1.23.4. Further implementation plan

The Polish Government is expected to approve the draft Act on energy efficiency transposing Article 8 soon. A summary of the current activities related to the implementation of Article 8 in Poland is provided in Table 48.

Table 48: Summary for the implementation of Article 8 in Poland.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> National legislation for the transposition of Art. 8 not in force yet, draft Act on Energy Efficiency currently under preparation |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Preliminary definition: companies which employ at least 250 employees OR have an annual turnover exceeding EUR 50m and/or a balance sheet exceeding EUR 43m. |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Not yet defined |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Energy/electricity supply audit of an enterprise |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Alternatively implementation of an energy or environmental management system in compliance with the relevant European Standards (i.e. ISO 50001, ISO 14001 or EMAS) possible |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No information available |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Company has to notify the president of the Energy Regulatory Office (ERO) about the implementation of the energy audit |
| | What kinds of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Currently under discussion, foreseen to be based on the turnover of the company |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> No information available |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Currently no schemes running which especially aim to support SMEs to implement energy audits |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Currently no schemes running which especially aim to support SMEs to implement energy management systems |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> National Chamber of Commerce (www.kig.pl) actively implements projects which received support from EU connected with energy efficiency improvements and engagement with small and medium enterprises, namely EUREMplus: Boost Energy Efficiency in Manufacturing SMEs by Extending European Energy Manager Training and Network |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No information available |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No information available |

2.1.24. Portugal

The implementation of the EED in Portugal falls under the responsibility of the Ministry of Environment, Spatial Planning and Energy. Portugal has had mandatory schemes in place with binding targets for energy efficiency since the 1980s. The main scheme is the Management System of Intensive Energy Consumption (SGCIE), the most recent update of which was published by Decree Law n.º 71/2008²³¹ in June 2008. In order to fully transpose the requirements of the EED into national law, Portugal published its Decree Law n.º 68-A/2015²³² on 30 April 2015.

Portugal has put in place an Energy Efficiency Fund that aims to fund programmes under the NEEAP. This fund was created through Decree Law no. 50/2010 in May 2010²³³. Through the fund there are various calls where companies can apply for funding for energy efficiency measures. Table 49 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Portugal. These instruments are further detailed below.

Table 49: Overview of instruments in Portugal.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|------------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | (•) | • | | | • | | | |
| Refund of energy audit costs | • | • | • | | | | | • | |

(•): Energy-based threshold possibly covers SMEs

2.1.24.1. Audits

Mandatory energy audit (Decree Law n.º 68-A/2015): Following the requirement to transpose the EED into its national law, Portugal published its Decree Law n.º 68-A/2015 on 30 April 2015. The decree law is designed to bring the country's existing energy efficiency measures in line with the EED, including the energy audit requirements of Article 8. Articles 12, 13 and 14 of the decree law correspond to Article 8, whilst annex IV corresponds to Annex VI of the EED. The implementation of this decree law is still considered to be ongoing, and Portugal has a number of questions around how to action certain elements of the EED, particularly related to the scope of companies and sites that should be included.²³⁴

Portugal has had mandatory energy efficiency schemes in place since the 1980s. The main scheme for industry is the Management System of Intensive Energy Consump-

²³¹ Ministry of Economy and Innovation (2008): Decree Law no 71/2008. Online: <http://dre.pt/pdf1sdip/2008/04/07400/0222202226.PDF> . Accessed: 16.10.2015.

²³² Ministry of Environment, Spatial Planning and Energy (2015): Decree Law no 68-A/2015, Online: <https://dre.pt/application/file/67123417>. Accessed: 16.10.2015.

²³³ Assembly of the Republic (2010): Law no 50/2010, of 7 December. Online: <http://dre.pt/pdf1sdip/2010/05/09800/0173901740.pdf> Accessed: 25.02.16.

²³⁴ Personal communication by Directorate General of Energy and Geology of 27.08.2015.

tion (SGCIE). This scheme mandates energy efficiency and energy consumption monitoring in intensive energy facilities (consuming more than 500 toe (20,934 GJ)/year) broadening the scope of the previous regulation known as the Regulations for Managing Energy Consumption (RGCE)²³⁵ (1,000 toe (41,868 GJ)/year).

Under SGCIE, mandatory energy audits are conducted every eight years. The Portuguese authorities consider these audits to be compliant with the requirements of Annex VI of the EED. Following the audit the facility operators are obliged to submit an Energy Consumption Rationalisation Plan (PREn), which includes targets for energy and carbon intensity and specific energy consumption, and the identified energy efficiency measures. This is submitted to the Directorate General of Energy and Geology (DGEG) to be validated. An agreement can then be signed to obtain discounted excise duties on fuels. Every two years an execution and progress report has to be presented and penalties are foreseen for those not meeting their targets. Under SGCIE, companies are mandated to implement the efficiency measures that are identified through audits, as long as they are considered cost-effective for the company.²³⁴

- **General definition:** Following the publication of the new decree law, companies are mandated to perform energy audits every four years if they do not meet the European Commission's definition of an SME i.e. they have over 250 employees, and they have an annual turnover exceeding EUR 50m or a balance sheet exceeding EUR 43m.²³⁶ This definition is not in line with that set by the EC. Companies also qualify for Portugal's original energy efficiency schemes based on the amount of energy they consume each year. These schemes remain in place (Decree Law n.º 71-2008²³¹). Portugal's previously existing energy efficiency schemes did not distinguish on the basis of organisation size, but established qualification dependent on energy use. These schemes are still in place and remain the basis of the country's energy efficiency improvement plans. Companies with an energy consumption over 500 toe/year are therefore required to carry out energy audits under SGCIE every eight years. They will also be required to implement their findings. There are therefore a large number of SMEs participating in these schemes (>500, which is around 50% of SGCIE participants)²³⁴ and, in this context, all of the requirements that apply to the large enterprises in Portugal also applies to SMEs.
- **Scope:** Specific exemptions for large companies from the obligation to conduct an energy audit in Portugal are not foreseen. The SGCIE previously exempted those companies in the EU ETS, but this is no longer allowed under the new decree law, in accordance with the EED.²³⁴ According to national statistics there are around 1000 large enterprises in Portugal. More than 1000 enterprises already participate in the SGCIE scheme, and around half of these are SMEs. Some of the enterprises participating in this scheme do so voluntarily.²³⁴
- **Exemptions:** Large enterprises are exempt from conducting energy audits if they have an environmental or energy management system in place, from an accredited certification body, that includes audits which meet the criteria of Annex VI of the EED.²³⁷
- **Deadlines:** Companies mandated to carry out audits in line with the requirements of Article 8 must do so every four years. The deadline for the first round of audits

²³⁵ Ministry of Industry, Energy and Export (1982): Decree Law n.º 58/82, 26th February 1982, Section n.º 359/82, 7th April 1982.

²³⁶ Ministry of Environment, Spatial Planning and Energy (2015): Decree Law no 68-A/2015, Online: <https://dre.pt/application/file/67123417> Accessed: 25.02.2016.

²³⁷ Ministry of Environment, Spatial Planning and Energy (2015): Decree Law no 68-A/2015. Online: <https://dre.pt/application/file/67123417>. Accessed: 16.10.2015.

is 5 December 2015. The wider group of companies participating in SGCIE is still required to carry out an SGCIE compliant audit every eight years. Companies falling under Portugal's transport regulations (RGCEST - Ordinance n.º 228/90) were previously required to carry out an audit every three years. Following the publication of the new decree law, this has been changed to every four years for large companies, corresponding to the timescales associated with Article 8.²³⁴

- **Multi-national companies:** Multi-national companies have to comply with Portuguese legislation concerning the sites located in the national territory.
- **Multi-site companies:** Multi-site companies within Portugal should include all of their sites in the audits, however, some exceptions are under discussion.
- **Minimum coverage:** Portugal's decree law does not put in place any explicit thresholds for minimum coverage, and expects that all energy use will be covered by the audits. There are currently no rules on sampling – all sites should take part in the audits.
- **Penalties for non-compliance:** Financial penalties can be issued for non-compliance with the audit requirements. These are specified in Article 31 of the decree law and range from EUR 2,500 to EUR 44,000.²³⁴
- **Specific provisions for buildings:** There are no specific provisions for buildings.
- **Specific provisions for transport:** There are no specific provisions for transport operations.
- **Monitoring:** Monitoring will be undertaken by DGEG. An application for the DGEG website is currently being developed, via which large enterprises will be expected to register and report their energy consumption. Depending on whether the company's activities fall under the category of buildings, industry or transport, it will be directed to an appropriate web page where it will upload the details of its audits (this template is currently under development). Audits carried out under existing schemes are already recorded and will not be required to be entered again by participating companies. Portugal requires enterprises to report quantitatively on the measures identified through the audits.²³⁴ In order to ensure that companies have undertaken audits (and have implemented measures in line with the requirements of SGCIE), DGEG will undertake periodic site visits.²³⁴

Table 50: Summary for the implementation of Article 8 in Portugal.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> The decree law n.º 68-A/2015 published on 30 April 2015. This legislation also brought existing energy efficiency schemes in line with the requirements of Article 8 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Large enterprises defined as having more than 250 employees, and an annual turnover of more than EUR 50m or a balance sheet of more than EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Portuguese legislation currently gives no specific consideration to multi-national companies Multi-site companies should include all sites in their audits |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> A number of mandatory schemes in place for energy efficiency, which include audits; most prominent of these are the scheme for industry, SGCIE, and for buildings the Energy Certification Scheme (Decree-law n.º 118/2013) |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> There are no alternative compliance options for audits. However, facilities, fleets and buildings that are covered by consumption reduction obligation schemes (SGCIE, SCE and RGCEST) are exempt from presenting a new audit given that those carried out under these schemes meet the minimum requirements of Annex VI of Directive |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Over 1000 companies carry out energy audits under existing schemes and it is estimated that around half of these are large enterprises |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> DGEG is developing an application under its own website which includes a template registration form that large enterprises must use to demonstrate compliance Site visits will be carried out to ensure compliance |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Penalties for non-compliance range from EUR 2,500 to 44,000. |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Portugal has not historically distinguished between large enterprises and SMEs for the purposes of energy efficiency, and around half of the 1000+ companies already participating in mandatory schemes such as SGCIE are SMEs |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Both SMEs and large enterprises can apply for funding through calls under the Energy Efficiency Fund Call directly relating to energy audits expected |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> No schemes specifically targeted at management systems |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> The MS engages on an individual company basis with all organisations participating in its energy efficiency schemes; regular site visits are conducted |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Portugal has had mandatory schemes for energy efficiency in place for all of its companies consuming over 500 toe/year since 2008, and for all companies consuming over 1000 toe/year since 1982 |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> The Directorate General for Energy and Geology supports the exchange of information relating to Article 8 |

Refund of energy audit costs (Decree Law n.º 71-2008): In accordance with Decree Law 71/2008,²³¹ organisations with an annual energy consumption of less than 1000 toe/year are entitled to apply for a refund of half the costs of an energy audit. This is limited to a maximum of EUR 750. It should be noted that this energy use threshold is not aligned with EC criteria for SMEs and therefore the funding may also be available to organisations meeting the EC definition of a large enterprise.

2.1.24.2. Energy management systems

Large enterprises that are implementing an energy or environmental management system - certified by an independent body in accordance with the relevant European or International Standards - are exempted from the requirements of decree-law 68-A/2015, provided that the management system concerned includes an energy audit on the basis of the minimum criteria based on Annex VI of the EED.²³⁸

2.1.24.3. Exchange mechanisms

The SGCIE scheme uses a web platform to provide information on identified opportunities and improvements at a sector level. This information is updated on a monthly basis and can be accessed by all organisations in the schemes.²³⁸

2.1.24.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Portugal is provided in Table 50. DGEG has developed an FAQ document to answer common questions being asked by the large enterprises about the requirements of Article 8.²³⁸

2.1.25. Romania

In Romania, the Energy Regulatory Authority (ANRE) is responsible for developing energy efficiency policy and for monitoring the implementation of Article 8 of the EED.

The Romanian legislation regarding mandatory energy audits and energy management systems is contained in the latest revision to the Energy Efficiency Law no. 121/2014.²³⁹ This sets national energy saving targets and transposes the requirements of Article 8. The revised law builds upon previous versions of the Energy Efficiency Law (first Energy Efficiency Law no 199/2000) that contained requirements for large energy users to undertake energy audits, implement energy management systems and appoint energy managers, but did not meet all the mandatory requirements of the EED.

Further legislation is due to be approved in autumn 2015 that will update the rules for energy management systems in Romania, as well as the thresholds for undertaking energy audits. Table 51 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Romania. These instruments are further detailed below.

²³⁸ Personal communication by Directorate General of Energy and Geology of 27.11.2015.

²³⁹ Romanian Parliament: Law on Energy Efficiency (2014): Online: <http://romaniascout.ro/wp-content/uploads/2014/08/Lege-121-din-2014-Eficienta-energetica-Monitorul-nr.-574-din-01.08.2014.pdf> Accessed: 20.10.2015

Table 51: Overview of instruments in Romania.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | (•) | • | | | • | | | |
| Mandatory energy manager | • | • | | • | | • | | | |

(•): Energy-based threshold possibly covers SMEs

2.1.25.1. Audits

Mandatory energy audits for large companies (Energy efficiency Law 121/2014): There has been legislation and guidance for energy management and energy audits in Romania since 2000 (Energy Efficiency Law no 199/2000). Under the Government Decision 22/2008, regarding energy efficiency and promoting the use of renewable energy sources to end-users, the following criteria were mandatory:²⁴⁰

- Operators with more than 1,000 toe (41,868 GJ) consumption of energy must have a certified energy manager, declare consumption, perform energy audits and answer an energy analysis questionnaire.
- Energy distributors, distribution system operators and retail power companies must improve their energy efficiency while still providing competitive prices. They must also complete energy audits and measures to improve efficiency to end users, and contribute to mechanisms or energy efficiency funds.
- Towns with 20,000 inhabitants must implement energy efficiency programmes.
- Companies and local government entities with 25 vehicles or more are required to develop monitoring programmes and management of fuel consumption.

The historic regulations have been carried forward in the new legislation with additional requirements for audits every four years and the scope of audit has been extended. The consequence is that more energy sources will be included in the audit, but audits will be undertaken less frequently. The new legislation improves the prioritisation of the measures to be implemented, and captures and records the savings potential and financial cost/benefit of recommended measures. The law also requires the realised energy efficiency benefit to be recorded.²⁴¹

- **General definition:** Energy Efficiency Law no. 121/2014 requires that all companies that are not SMEs (using the EU definition)²⁴² must undertake energy audits and comply with the Energy Efficiency Law. For those companies that fit this defini-

²⁴⁰ Joint Research Centre, Institute for Energy and Transport (2014): Energy audits and energy management systems under Energy Efficiency Directive Article 8 workshop. Online: <http://iet.jrc.ec.europa.eu/energyefficiency/workshop/energy-audits-and-energy-management-systems-under-energy-efficiency-directive-article-8#!>. Accessed: 20.10.2015.

²⁴¹ Personal communication by Mrs T Hristov (ANRE) of 09.07.2015.

²⁴² Romanian Parliament (2014): Law no. 121/2014 on Energy Efficiency: Online: <http://www.escom.ro/images/Legea%20nr.%20121%20din%2018%20iulie%202014%20privind%20eficienta%20energetica.pdf>. Accessed: 20.10.2015.

tion, the requirements of the audit and wider compliance vary depending upon the energy consumption of the site/company. If the company or site has an annual energy consumption greater than 1,000 toe then it must complete a full audit annually and employ an approved energy manager. If the annual energy consumption is less than 1,000 toe, the company must only complete the energy audits. If a company or site would meet the EU definition of an SME (i.e. it is not a large enterprise), but it has an annual energy consumption greater than 1,000 toe it must also comply with the requirements of the Energy Efficiency Law²⁴². This means that the Romanian legislation covers a wider group of companies than strictly non-SMEs. Every unit or site that has an annual energy consumption of more than 1,000 toe is certified through an independent agreement. The requirements of each agreement are for the site to have (a) a certified Energy Manager and (b) an energy efficiency programme including measurement, local investment and completion of an energy audit every four years (the audit must cover all energy consumption). If a site consumes less than 1,000 toe it can be part of a group energy efficiency programme. Where a company meets the 1,000 toe threshold across a number of sites, it must comply with the requirements in full. For example, if the company has two sites and they each consume 500 toe each year, then the combined energy consumption of these sites means that the company as a whole meets the 1,000 toe threshold.

- **Scope:** The mandatory audits apply to all organisations that fall under the definition given above. In 2013 more than 260 applications for authorisation for energy managers and auditors had been analysed. In addition 650 industrial consumers with consumption exceeding 1,000 toe per annum have been monitored. The view in Romania is that as the legislation has largely been in place since 2000 most of the companies covered by the law have already implemented regular audits on an annual basis. However, it is expected that some new companies will be identified as large companies expected to comply with the legislation. As a consequence the overall number of audits undertaken will increase.²⁴³
- **Exemptions:** Operators that consume more than 1,000 toe per year and implement an energy management system or environmental management system certified by an independent body in accordance with European standards or international bodies are exempt from carrying out an energy audit every four years. However, the certified system must include an energy audit.
- **Deadlines:** Audits are to be completed by 5 December 2015.²⁴¹
- **Multi-national companies:** International companies must comply with the same obligations as the companies solely based in Romania. The need to comply with Romanian laws is dependent upon annual energy consumption and scale of activity within Romania. This is regardless of obligations or energy monitoring activities within other nations. Energy audits undertaken in other countries do not support compliance in Romania unless operations are identical. This will be assessed on a case by case basis.
- **Multi-site companies:** For companies with multiple sites, sampling of similar sites will only be agreed on a case by case basis. The decision will be based on various factors including the structure of energy consumption, size of energy consumption, variation of energy consumption, technology, age of installation, and criteria.

²⁴³ Personal communication by Mrs T Hristov (ANRE) of 23.11.2015

- **Minimum coverage:** Currently the obligation is for 100% of the energy to be audited for companies whose consumption is greater than 1,000 toe, however, companies with lower consumption can elect to audit a lower level of total consumption (a minimum level is not specified but it must be proportionate to the business). The current guidance may change with the new legislation expected in October 2015.
- **Penalties for non-compliance:** Companies that do not comply with the regulations may be fined amounts ranging between LEI 10,000 - 200,000 (ca. EUR 2,250 – 45,000).²⁴²
- **Specific provisions for buildings:** No specific provisions for buildings have been identified. The scope of an energy audit is defined as 100% of the energy consumed by a user.
- **Specific provisions for transport:** No specific provisions for transport have been identified.
- **Monitoring:** Romania requires management to be involved with the yearly energy efficiency programme to ensure buy-in and implementation. Subsequent energy audits must evaluate the implementation of the recommendations of the previous audit. ANRE holds the information database detailing the company information, energy audits completed, energy efficiency indicators and measures recommended. Reports must be submitted to ANRE by 30 April each year.

2.1.25.2. Energy management systems

Mandatory energy manager (Energy Efficiency Law (121/2014)): There is no specification for large enterprises to implement energy management systems as a result of the EED implementation. However Romanian Energy Efficiency Law no. 121/2014 does require enterprises with consumption of energy above 1,000 toe to employ a certified energy manager. The role is responsible for reporting energy consumption to the authorising body (ANRE) as well as implementing any energy saving measures from previous energy audits.

2.1.25.3. Exchange mechanisms

Though there are no formalised exchange mechanisms in Romania, there are several bodies that support large companies and SMEs in achieving energy efficiency.²⁴⁴ Romanian national level programmes focus on the construction, manufacturing and service sectors. Regional technical assistance centres have been created providing expert knowledge and understanding of the potential of energy savings thereby reducing the associated costs for SMEs. These centres also offer an opportunity for promotional activity for audit companies and support contact with SMEs.

²⁴⁴ These include ANCER: Romanian Association of Industrial Energy Consumers (<http://www.ancer.ro/>), created in 1994 and affiliated to IFIEC WORLD in 1995, member of Consultative Council of National Regulatory Authority for Energy; OER: Romanian Energy Cities, established in 1995 as a Romanian Chapter of European Energy Cities Network (Energie Cites) and having 34 members in 2015; AEECR: Association of Energy Auditors for Buildings, ARPEE: Romanian Association for Energy Efficiency Promotion, having big energy consumers as founding members (ALSTOM Romania, ABB Romania, GdF Suez Romania, Lafarge Romania, OMV Petrom, PricewaterhouseCoopers Management Consultant S.R.L., etc.), ABIEC: Association of Big Industrial Energy Consumers, including big units from iron and aluminum industry.

Table 52: Summary for the implementation of Article 8 in Romania.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Energy Efficiency Law no. 121/2014, published 1 August 2014 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Any enterprise that does not meet the EC definition of an SME All enterprises with annual greater energy consumption than 1,000 toe |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> If combined domestic activities have annual consumption of greater than 1,000 toe this is a large enterprise; if a single site has annual consumption greater than 1,000 toe then it also has to comply with large enterprise regulations |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Previous iterations of the current legislation have required large enterprises to implement energy audits since 2000; consequently businesses are accustomed to implementing the audits |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Implementation of ISO 50001 and ISO 14001 can be used to meet the needs of the Energy Efficiency Law but only if a company proves that they are undertaking energy audits as well |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> 650 large enterprises were monitored in 2013 There are ~1,500 large enterprises in Romania |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Annual reporting procedure established for all enterprises covered by the Energy Efficiency Law Use of a database operated by ANRE that captures information on the audits completed, recommendations made and actions implemented |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> There are different financial penalties for non-compliance specific for every type of obligation ranging from EUR 2,250 to 45,000 |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> No mandatory audit requirements has been legislated for SMEs except those that meet the 1,000 toe threshold |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Regional technical assistance centres have been set up to support SMEs |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> No schemes established for SMEs to implement energy management systems except those that meet the 1,000 toe threshold, and are mandated to undertake audits |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Through industry bodies and chamber of commerce the MS has engaged with SMEs |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Workshops and presentations have been held |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Chambers of commerce and industry sector bodies |

2.1.25.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Romania is provided in Table 52. New legislation is expected to be published in autumn 2015, which may include further instructions on the use and advantages of energy management systems.

2.1.26. Slovakia

The most recent official communication of the Slovak Government covering the implementation of Article 8 of the EED is the third Slovak NEEAP submitted in July 2014.²⁴⁵ In general, the transposition of the EED in Slovakia lies with the Ministry of Economy of the Slovak Republic (Ministerstvo hospodárstva Slovenskej republiky)²⁴⁶, and the operational implementation of Article 8 with the Slovak Innovation and Energy Agency (SIEA - Slovenská inovačná a energetická agentúra).

As a response to the European Energy Service Directive (2006/32/EC), Slovakia introduced mandatory energy audits for companies exceeding certain energy demand thresholds in 2009. Compliance with this obligation, however, was relatively low. With the advent of the EED, the corresponding national laws were revised to comply with the new requirements of Article 8. In addition to this introduction of mandatory audits, energy audits were also partially addressed by various Operational Programmes²⁴⁷ in Slovakia running from 2007 to 2013. One example is the Operational Programme on Competitiveness and Economic Growth²⁴⁸ which addressed the competitiveness of industry and services through innovation along three priority axes. One of these axes was referred to as “Energy” and dealt with energy saving measures²⁴⁹ which implies the presence of auditing activity. Slovakia continues to rely on such Operational Programmes to more explicitly promote energy audits, e.g. via the Operational Programme on Environmental Quality.

Table 53 provides an overview of instruments related to energy audits, energy management systems and exchange mechanisms currently implemented in Slovakia. These instruments are further detailed below.

²⁴⁵ Slovak Government (ed.) (2014): Slovak Energy Efficiency Action Plan 2014-2016 with an Outlook up to 2020. Online: https://ec.europa.eu/energy/sites/ener/files/documents/NEEAP_EN_ENER-2014-01001-00-00-EN-TRA-00.pdf. Accessed: 19.03.2015.

²⁴⁶ Concerted Action (ed.) (2014): D9: EED implementation in Slovakia. Online: <http://www.esd-ca.eu/reports/national-implementation-reports/national-implementation-report-2014-slovakia>. Accessed: 21.07.2015.

²⁴⁷ Operational programs are plans that detail how MS will spend funds from the European Structural and Investment Funds. These programs may be relevant for specific regions, country-wide goals and inter-regional or cross-border activities and address a set of thematic objectives addressed in European Cohesion Policy (European Commission (ed.) (2015): Glossary Operational Program. Online: http://ec.europa.eu/regional_policy/en/policy/what/glossary/o/operational-program. Accessed: 21.07.2015.)

²⁴⁸ Ministry of Economy of the Slovak Republic (ed.) (2015): Operačný program Konkurencieschopnosť a hospodársky rast (OP KaHR) . Online: <http://www.economy.gov.sk/operacny-program-konkurencieschopnost-a-hospodarsky-rast--op-kahr--6118/127803s>. Accessed: 21.07.2015.

²⁴⁹ Ministry of Economy of the Slovak Republic (ed.) (2011): Operational program Competitiveness and Economic Growth (OP C&EG). Online: http://www.mhsr.sk/index/open_file.php?ext_dok=136245&asciiname=ext_dok-op_kahr_eng_march_2011. Accessed: 21.07.2015.

Table 53: Overview of instruments in Slovakia.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| SlovSEFF III programme | • | • | • | | | | | • | |

2.1.26.1. Energy audits

Mandatory energy audits (pursuant to Acts No 476/2008 and 321/2014): The Slovak Energy Efficiency Act 476/2008 entered into force on 1 January 2009 as an implementation of the European Directive on energy end-use efficiency and energy services (Directive 2006/32/EC). According to this Act, industrial establishments with an annual energy demand exceeding 5,500 MWh and agricultural entities with a higher demand than 2,500 MWh per year have to carry out a mandatory energy audit by the end of 2011 or 2013, depending on their annual energy consumption. There was no obligation to implement the recommended action resulting from the energy audit. Failure to comply with the requirement to carry out an audit resulted in a financial penalty.²⁵⁰ An assessment of energy intensity was to be periodically carried out every five years.²⁵¹ By 31 December 2014, 150 entities had submitted an audit report to the monitoring system operator, the Slovak Innovation and Energy Agency.²⁵² However, roughly 1,000 entities should have carried out audits by the end of 2011.²⁵³ A revision of this law was published in October 2014 as Act 321/2014 (esp. § 14) and entered into force on 1 December 2014, responding to the requirements described in the EED. Legislation was modified to cover all large enterprises. Further specifications on energy audits are laid down in Act 179/2015 of 6 July 2015, in force since 1 August 2015. The following details apply to mandatory audits in large companies:

- **General definition:** With regard to the definition of company size, Act 321/2014 refers to the definition of an SME in the EU Regulation 651/2014 of 17 June 2014 on state aid categories. In line with the definition provided in the EED, large companies are defined in Slovak legislation as those that are not SMEs. It should be noted that all organisations that request public funding for energy projects will have to carry out an energy audit.²⁵⁴

²⁵⁰ SIEA (ed.) (2015): Zákon č. 476/2008 Z.z. - Energetický audit. Online: <https://www.siea.sk/clanky-legislativa/c-861/zakon-c-476-2008-z-z-energeticky-audit/>. Accessed: 19.03.2015.

²⁵¹ SIEA (ed.) (2012): Energy Efficiency Policies and Measures in Slovakia in 2012. ODYSEE-MURE 2010. Monitoring of EU and national energy efficiency targets. Online: <http://www.odyssee-mure.eu/publications/national-reports/energy-efficiency-slovakia.pdf>. Accessed: 19.03.2015.

²⁵² Personal communication by Mr. Miroslav Mariás (Ministry of Economy of the Slovak Republic) of 11.09.2015.

²⁵³ SIEA (ed.) (2015): Prezentácie z konferencie Energetický audit v praxi. Online: http://www.siea.sk/bezplatne_poradenstvo_aktuality/c-1339/prezentacie-z-konferencie-energeticky-audit-v-praxi/. Accessed: 19.03.2015.

²⁵⁴ SIEA (ed.) (2015): Zákon č. 321/2014 Z.z. - Energetický audit. Online: <http://www.siea.sk/clanky-legislativa/c-8897/zakon-c-321-2014-z-z-energeticky-audit/>. Accessed: 20.07.2015.

- **Scope:** There are no exemptions foreseen from the obligation to carry out audits. According to the Slovak NEEAP, a total of 614 companies will be subject to the obligation to carry out an energy audit for large companies (based on 2010 figures).²⁴⁵
- **Exemptions:** Energy management systems that require the implementation of energy audits can be used as a substitute for the separate obligation of carrying out the mandatory audit as a stand-alone audit for the first time and then continue with ISO 50001.²⁵² Thus, Slovak legislation foresees that an energy audit is required if an alternative energy or environmental management systems is used.²⁵⁵
- **Deadlines:** The Slovak law compels large enterprises to carry out an energy audit at least once every four years. The first audit should be carried out by 5 December 2015.²⁵² Compliance with the obligation to carry out an audit must be demonstrated by submitting a set of summary data from the audit to SIEA.²⁵⁵
- **Multi-national companies:** In general, the Slovak interpretation of companies is based on the definition given in Annex I of the EU Regulation 651/2014.²⁵⁵ All companies considered as large ones have to report to SIEA.²⁵²
- **Multi-site companies:** According to information from SIEA, linked companies should also be considered when determining company qualification figures.²⁵⁴ The Slovak implementation generally follows the definition of Annex I of the EU Regulation 651/2014.²⁵⁵
- **Minimum coverage:** The minimum coverage of the audit has to be 90% of energy demand as set out in the Slovak legislation (Decree 179/2015).²⁵⁵
- **Penalties for non-compliance:** If large companies do not comply with their obligation to carry out an audit, they are obliged to pay a penalty of at least EUR 5,000 and up to EUR 30,000,²⁵⁴ depending on the severity/repetitiveness of the non-compliance.²⁵⁵
- **Specific provisions for buildings:** There are no specific provisions for buildings. Responsibility for assuring that an energy audit for a building is carried out lies with the owner of the building.²⁵⁵
- **Specific provisions for transport:** There are no specific provisions for transport. Transport is to be included in the coverage of the mandatory energy audits. In the case of cross-border transport, this activity should be audited as part of the headquarters' energy impact.²⁵⁵ If fuel is used abroad but if it is balanced in a Slovak company as part of its financial statement, it is subject to the 90% coverage rule described above.²⁵²
- **Monitoring:** The implementation of the audits is monitored. All companies have to submit a set of summary data about the audit, and on request the written report. The required data for reporting is detailed in Act 179/2015. The data will thereafter be assessed by the authorities and a summary published if the audit was partially or fully funded or if a large company requests it.²⁵⁴

SlovSEFF III programme (Slovak Sustainable Energy Finance Facility): The

²⁵⁵ Personal communication by Mr. Miroslav Marias (Ministry of Economy of the Slovak Republic) of 21.07.2015.

SlovSEFF programme²⁵⁶ was established in 2007 as a financing mechanism for investments in residential and industrial energy efficiency. More specifically, it provides private companies, energy service companies and housing associations/cooperatives with a financing facility for investments in energy efficiency and renewable energy to reduce greenhouse gas emissions.²⁵⁷ The programme addresses all company sizes.²⁵⁵ It is financed by the sale of Emissions Trading System emission certificates from Slovakia to Spain. The programme is currently in its third phase, SlovSEFF III. In the first and second phase of the programme, approximately EUR 150m was used to finance approximately 700 projects with total energy annual savings estimated at 583 GWh/year. The majority of the funding (about 600 projects out of the 700 and more than 60% of the financial resources) was dedicated to residential projects.²⁵⁷ Next to the financing, applicants obtain an incentive of between 5 to 20% of the disbursed loan. In order to participate in the project, applicants must provide a form that provides information on the measures they will implement. Upon approval of the application, industrial companies must carry out an energy audit to confirm that the most appropriate energy saving measures have been chosen. The implemented savings must be verified later on by a third party.

2.1.26.2. Energy management systems

It has been reported that there is a considerable need for energy management systems in Slovakia,²⁵⁸ and there were only a total of twelve ISO 50001 certificates in Slovakia in 2013.²⁵⁹ The use of STN EN ISO 50001 was introduced by Slovak National Accreditation Service (SNAS) in 2014.²⁵² No specific activities could be identified in Slovakia that explicitly address the introduction of energy management systems. However, the introduction of a corresponding system could be subject to funding when considered as general measure to improve energy efficiency, competitiveness or related aspects under an Operational Programme.

2.1.26.3. Exchange mechanisms

Since 2009 the SIEA has provided a telephone-based service offering free advice for entrepreneurs in energy-related matters. This service is based on three counselling centres established in 2010, providing consultation on matters related to energy efficiency measures and renewable energy. Next to this information service, SIEA also organises conferences on energy-related issues and similar related activities.²⁶⁰

²⁵⁶ See: <http://www.slovseff.eu>.

²⁵⁷ SlovSEFF.EU (ed.) (2015): SlovSEFF I & II. Online: <http://www.slovseff.eu/index.php/en/about-en/brief-summary-of-slovseff-i-slovseff-ii>. Accessed: 20.07.2015.

²⁵⁸ Energy Efficiency Watch (2013): Energy Efficiency in Europe. Assessment of Energy Efficiency Action Plans and Policies in EU Member States 2013. Country Report Slovakia. Online: http://www.energy-efficiency-watch.org/fileadmin/eew_documents/Documents/EEW2/Slovakia.pdf. Accessed: 19.03.2014.

²⁵⁹ International Organization for Standardization (2015): ISO Survey 2013. ISO 50001 – Certificates worldwide – 2013. Online: http://www.iso.org/iso/iso-survey_2013.zip. Accessed: 19.03.2015.

²⁶⁰ See: <http://www.siea.sk/op-kvalita-zivotneho-prostredia/>; <http://www.siea.sk/bezplatne-poradenstvo-podnikatelia/>

Table 54: Summary for the implementation of Article 8 in Slovakia.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Mandatory audits transposed by Act No 476/2008 amended by Act 321/2014 and further specified in Decree 179/2015 |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Slovak definition refers to EU Regulation 651/2014 and thus in line with EU definition |
| | How are multi-national companies and multi-site enterprises dealt with? | <ul style="list-style-type: none"> As for the definition of large enterprises, implementation is based on 651/2014 |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Next to mandatory audits, the SlovSEFF III programme partially addresses audits in companies |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Compliance given if energy audit is carried out as part of an energy or environmental management system No exemptions are foreseen for companies |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> Approximately 150 companies have implemented audits based on the previous requirements |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> Audit summary results to be collected by authorities and reviewed for quality assurance |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Financial penalties between EUR 5,000 and 30,000 depending on degree of non-compliance |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Companies are to some degree addressed by the SlovSEFF III programme |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Operational programme "Environmental Quality" for supporting energy audits and implementation of measures in SME currently under elaboration as well as support Scheme for Bratislava region in October 2015 |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Free advice for entrepreneurs based on three counselling centres |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> No activities with specific organisations launched |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Information on website and conferences with industrial participation as well as information updates via Ministry and SIEA |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> No specific organisations that represent SMEs in energy efficiency matters |

2.1.26.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Slovakia is provided in Table 54. A new Operational Programme “Environmental Quality” is managed by the Ministry of Environment of the Slovak Republic (Ministerstvo životného prostredia SR). The overall programme has an indicative budget of EUR 300m and covers several topics including energy. This also includes support for promoting energy audits in SMEs and for the implementation of recommended measures for both large companies and SMEs identified through the energy audit.^{252,261} A corresponding call will be opened in February 2016.²⁶² Following the interpretation of the Slovak NEEAP, the introduction of energy or environmental management systems can be considered as a measure to improve energy efficiency and will thus be covered by the Operational Programme as well.²⁴⁵ Slovakia will also introduce a support scheme to carry out energy audits in the Bratislava region for SMEs in October 2015.²⁵²

2.1.27. Slovenia

The most recent communication from the Slovenian Government to the European Commission is the third NEEAP published in May 2015.²⁶³ In this document the Slovenian Government specifies the implementation of the obligation for large companies to conduct energy audits, which was subsequently transposed via the Energy Act into national legislation (Table 55). However, the Government does not formalise the planned measures in the policy mix fostering the implementation of energy audits and energy management systems for SMEs in its third NEEAP. Furthermore, the Energy Act does not prescribe how the Ministry responsible for energy will encourage the implementation of energy audits, although it does determine that the Minister responsible for energy should prescribe a detailed methodology for the implementation of energy audits and the elements that an energy audit must contain. The following table and description provide an overview about the current status of implementation.

Table 55: Overview of instruments in Slovenia.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|------------------|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit ¹ | • | (•) ² | • | | | • | | | |
| ¹ Secondary legislation is under preparation (•) ² : SMEs possibly included due to lower financial thresholds | | | | | | | | | |

²⁶¹ Ministry of Environment of the Slovak Republic (ed.) (2015): Operačný program Kvalita životného prostredia. Online: <http://www.op-kzp.sk/energetika/>. Accessed: 21.07.2015.

²⁶² SIEA (ed.) (2015): Harmonogram výziev implementovaných SIEA. Online: <http://www.siea.sk/harmonogram-vyziev/>. Accessed: 21.07.2015.

²⁶³ Ministry of Infrastructure (2015): ENERGY EFFICIENCY ACTION PLAN 2014–2020 (AN URE 2020). Online: https://ec.europa.eu/energy/sites/ener/files/documents/NEAPSLOVENIA_en.pdf. Accessed: 11.09.2015.

2.1.27.1. Energy audits

Mandatory energy audit: Article 8 of the EED has been partially transposed through Art. 354 of the Energy Act (energetski zakon)²⁶⁴ of 4 March 2014. The secondary legislation, which will formalise the methodology for the implementation and content of the mandatory energy audits, is currently under preparation. The following description is mainly based on the Energy Act adopted by the Slovenian Government in 2014.

- **General definition:** The general definition for large companies is set out in Article 55 of the Act 544-VI, which states that a large company is a company that has more than 250 employees OR a turnover of at least EUR 35m AND a balance sheet of at least EUR 17.5m.²⁶⁵ This definition differs significantly from the EU definition. Hence, companies that meet the EU SME definition can be subject to energy audit obligations in Slovenia.
- **Scope:** No information on excluded organisations is available yet. Seven large enterprises have implemented a certified energy management system in line with ISO 50001:2011 and 185 large enterprises have implemented an environmental management system in line with ISO 14001:2004. There is no information available on how many enterprises have already carried out an energy audit. The third NEEAP from Slovenia estimates that at least 108 energy audits were carried out in the period from 2011 to 2012. Of these, 77 energy audits were supported by grants as part of final customer energy saving schemes.²⁶⁶ At the time of writing, no information was available regarding the size of the target group covered by the regulation to conduct an energy audit.
- **Exemptions:** Obligated companies are also allowed to carry out an energy audit within the framework of a voluntary agreement or to comply with the implementation of an energy or environmental management system. This system has to be approved by an independent body in accordance with the relevant European and international standards (Article 354 Energy Act).
- **Deadlines:** Obligated companies have to undertake the energy audit by 5 December 2015 and every four years thereafter if they continue to be subject to the regulation.
- **Multi-national companies:** No information available yet.
- **Multi-site companies:** No information available yet.
- **Minimum coverage:** No information available yet.

²⁶⁴ Uradni List (2014): Decree on the promulgation of the Energy Act (EZ-1). <https://www.uradni-list.si/1/content?id=116549>. Accessed: 06.09.2015.

²⁶⁵ Ministry of Economic Development and Technology (2012): COMPANIES ACT (ZGD-1). Online: http://www.mgrt.gov.si/fileadmin/mgrt.gov.si/pageuploads/zakonodaja/ZGD-1_PREVOD__13-12-12.pdf. Accessed: 06.09.2015.

²⁶⁶ Ministry of Infrastructure (2015): ENERGY EFFICIENCY ACTION PLAN 2014–2020 (AN URE 2020). Online: https://ec.europa.eu/energy/sites/ener/files/documents/NEAPSLOVENIA_en.pdf. Accessed: 11.09.2015.

Table 56: Summary for the implementation of Article 8 in Slovenia.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Art. 354 of the Energy Act (energetski zakon) |
| | How are large enterprises defined? | <ul style="list-style-type: none"> At least 250 employees or a turnover of at least EUR 35m and a balance sheet of at least EUR 17.5m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> No information available yet |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> No information available yet |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> No information available yet |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No information available yet |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> No information available yet |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> No information available yet |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> No information available yet |
| | What support schemes for SMES for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Grants for the implementation of energy audits and energy management systems in the future planned |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Grants for the implementation of energy audits and energy management systems in the future planned |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Chamber of Commerce and its branch associations were invited to cooperate in national programmes for the promotion of energy audits to SMEs²⁶⁷ |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Chamber of Commerce organised several conferences targeted at SMEs (e.g. the traditional annual conference organised at the Megra fair)²⁶⁷ |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> I.a. Chamber of Commerce |

²⁶⁷ Eurochambres (2015): Transposition Study. Energy Audits for Europe. Assessment of the transposition of Article 8 of the Energy Efficiency Directive (2012/27/EU) into Member State legislation. Online: http://www.eurochambres.eu/DocShare/docs/2/HPOFILKBEENNPIFPFFINLOAHFTB76E4NQOQHUCK91DYC/EUROCHAMBRES/docs/DLS/Transposition_Paper_Art_8_EED_24072015-2015-00266-01.pdf. Accessed: 06.09.2015.

- **Penalties for non-compliance:** According to Article 489 of the Energy Act, a fine ranging from EUR 5,000 to EUR 125,000 shall be imposed on a legal person if this person does not provide the information required by the regulations referred to in the second paragraph of Article 32 of the Energy Act. Additionally, a fine between EUR 2,000 and EUR 10,000 could be imposed on the responsible person of the legal entity (e.g. Director of the company).
- **Specific provisions for buildings:** No information available yet.
- **Specific provisions for transport:** No information available yet.
- **Monitoring:** The third NEEAP states that the Monitoring of the implementation of energy audits in large enterprises will in the future be taken over by an Agency. Additionally there will be a system established that ensures the minimum requirements set by the EED.²⁶⁶

2.1.27.2. Energy management systems

There were no energy management systems currently in place identified within this study in Slovenia.

2.1.27.3. Exchange mechanisms

There were no exchange mechanisms according to the definition applied in this study identified in Slovenia.

2.1.27.4. Further implementation plan

Slovenia's third NEEAP states that a programme including grants for the implementation of energy audits and energy management systems is planned for the commercial sector. Additionally, funds targeted at SMEs for the introduction of energy management systems are planned for the future.²⁶⁶ A summary of the current activities related to the implementation of Article 8 in Slovenia is provided in Table 56.

2.1.28. Spain

The responsible institution for the national implementation of the EED in Spain is the Ministry of Industry, Energy and Tourism.²⁶⁸ The most recent communication to the European Commission is the third NEEAP, which presents the promotion of energy audits and energy management systems as well as the improvement of technology equipment and processes in SMEs, as being the most helpful measures to achieve the expected savings. However, the report does not specify how some of these measures will be designed and implemented, as they will be implemented through a Royal Decree that has not yet been adopted. Currently there is limited access to specific information especially on programmes promoting energy audits or energy management systems. Due to the fact that Spain consists of 17 autonomous communities, energy efficiency policy is mainly characterised by local programmes. Each region decides independently on the allocation of resources to the specific programme.²⁶⁹ Currently

²⁶⁸ Ministry of Industry, Energy and Tourism (2014): 2014–2020 NATIONAL ENERGY EFFICIENCY ACTION PLAN. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_spain.pdf. Accessed: 17.08.2015.

²⁶⁹ For a detailed overview regarding the regional Energy Agencies in Spain see: IDAE (2015): Agencias Regionales y Locales de Energía. Online:

most of the regional activities are mainly focused on energy audits in buildings.²⁷⁰ Table 57 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Spain. These instruments are further detailed below.

Table 57: Overview of instruments in Spain.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| (Mandatory energy audit) | (•) | | (•) | | | (•) | | | |
| Programme for Energy Efficiency in SMEs and Large Companies in the Industrial Sector | • | • | | • | | | | • | |
| (•): National legislation not in force yet | | | | | | | | | |

2.1.28.1. Energy audits

Mandatory energy audits (Proyecto del Real decreto pro el que se transpone la directive 2012/27/UE del parlamento europeo y del consejo de 25 de octubre de 2012, relative a la eficiencia energetic, en lo referente a auditorías energéticas, acreditación de proveedores de servicios y auditors energéticos, promoción de la eficiencia energetic y contabilización de consumos energéticos): Spain has not yet transposed the obligation to conduct energy audits for large companies resulting from Article 8 of the EED into national legislation. A draft Royal Decree is currently under discussion and is still pending approval by the Government. Therefore, the following description of the general framework conditions regarding this law is based on the preliminary information available. According to the draft Royal Decree energy audits are mandatory for large companies.²⁷¹

- **General definition:** According to Article 2 Draft Royal Decree large companies are defined as companies which (a) employ more than 250 employees and (b) have an annual turnover exceeding EUR 50m and/or a balance sheet exceeding EUR 43m.²⁷¹ The current draft for the definition in Spain therefore differs significantly from the definition from the European Commission because both the employee threshold and one of the financial thresholds have to be exceeded to be considered as a large company.

<http://www.idae.es/index.php/mod.pags/mem.detalle/relcategoria.1055/id.102/relmenu.78>. Accessed: 15.09.2015.

²⁷⁰ For further information on regional programs supporting energy audits in buildings see: Ministry of Industry, Energy and Tourism (2014): 2014–2020 NATIONAL ENERGY EFFICIENCY ACTION PLAN. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_spain.pdf. Accessed: 17.08.2015.

²⁷¹ Ministerio de Industria, Energía y Turismo (2014): Proyecto del Real decreto pro el que se transpone la directive 2012/27/UE del parlamento europeo y del consejo de 25 de octubre de 2012, relative a la eficiencia energetic, en lo referente a auditorías energéticas, acreditación de proveedores de servicios y auditors energéticos, promoción de la eficiencia energetic y contabilización de consumos energéticos. Online: <http://www.minetur.gob.es/energia/es-ES/Participacion/Documents/proyecto-rd-directiva-201227UE/proyecto-RD-directiva-eficiencia-energetica.pdf>. Accessed: 17.08.2015.

- **Scope:** There are currently no exemptions planned in Spain. The Spanish Government estimates that 3,782 companies and 27,286 establishments will have to carry out a mandatory energy audit.²⁷²
- **Exemptions:** Companies are allowed to conduct the energy audit in accordance with the minimum guidelines set out in Article 4 of the Draft Royal Decree, within the implementation of an energy or environmental management, certified by an independent body under international or European standards.
- **Deadlines:** According to Article 3 of the Draft Royal Decree, the obligated companies must conduct an energy audit before 5 December 2015 and thereafter at least every four years from the date of the previous energy audit.²⁷¹
- **Multi-national and multi-site companies:** Currently no detailed information is available.
- **Minimum coverage:** No detailed information is available. This is foreseen to be connected to the requirements set by the EED.
- **Penalties for non-compliance:** According to Article 80 of Ley 18/2014 the Spanish Government defines the amount of fines according to the severity of the infringement. Therefore, the Government distinguishes between “very serious infringements” which will be punished with a fine of EUR 10,001 to EUR 60,000, “serious offenses” which will be punished with a fine of EUR 1,001 to EUR 10,000 and “minor offenses” which will be punished with a fine of EUR 300 to EUR 1,000. The amount will be defined on a case-by-case basis. However, in any case the amount of the penalty may not exceed 10% of the annual turnover of the offender or 10% of the annual net consolidated turnover of the parent company of the group to which the company belongs.²⁷³
- **Specific provisions for buildings:** If the company holds an energy efficiency certificate obtained in accordance with Royal Decree 235/2013, which is a certification for the energy performance of buildings, the part of the company to which this applies is allowed to be exempted from the energy audit.²⁷¹
- **Specific provisions for transport:** If the obligated company implements a management system for transportation including a fleet management system, and runs courses on efficient fleet management or efficient driving, the transport area is allowed to be exempted from the energy audit.²⁷¹
- **Monitoring:** The Spanish Ministry of Industry, Energy and Tourism aims to create an Administrative Register for Energy Audits.²⁷¹ Obligated companies that have conducted an energy audit are required to submit an application for registration to the Administrative Register for Energy Audits within three months after the energy audit has been implemented (Article 6 No. 3 Draft Royal Decree). According to Article 5 of the draft Royal Decree, the monitoring of compliance will be conducted on a random selection of a statistically significant proportion of energy audits performed in each period (four years).

²⁷² Ministry of Industry, Energy and Tourism (2014): 2014–2020 NATIONAL ENERGY EFFICIENCY ACTION PLAN. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_spain.pdf. Accessed: 17.08.2015.

²⁷³ Boletín Oficial Del Estado (2014): Ley 18/2014, de 15 de octubre, de aprobación de medidas urgentes para el crecimiento, la competitividad y la eficiencia. Online: <https://www.boe.es/boe/dias/2014/10/17/pdfs/BOE-A-2014-10517.pdf>. Accessed: 15.09.2015.

Table 58: Summary for the implementation of Article 8 in Spain.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> • Proyecto del Real decreto pro el que se transpone la directive 2012/27/UE del parlamento europeo y del consejo de 25 de octubre de 2012, relative a la eficiencia energetica, en lo referente a auditorias energéticas, acreditación de proveedores de servicios y auditors energéticos, promoción de la eficiencia energetica y contabilización de consumos energéticos |
| | How are large enterprises defined? | <ul style="list-style-type: none"> • More than 250 employees AND • Annual turnover exceeding EUR 50m and/or a balance sheet exceeding EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> • No detailed information available |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> • Programme for Energy Efficiency in SMEs and Large Companies in the Industrial Sector |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> • Energy or environmental management, certified by an independent body under international or European standards |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> • No detailed information available |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> • Administrative Register for Energy Audits planned • Monitoring on a random selection of a statistically significant proportion of energy audits performed in each period |
| | What kinds of penalties have been established for non-compliance? | <ul style="list-style-type: none"> • Depending on the severity of the infringement the respective company could be punished with a fine of up to EUR 60,000 |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> • No detailed information available |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> • No support schemes for energy audits were identified in this study |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> • Programme for Energy Efficiency in SMEs and Large Companies in the Industrial Sector |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> • No detailed information available |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> • No detailed information available |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> • No exchange mechanisms according to the definition applied in this study were identified |

2.1.28.2. Energy management systems

Programme for Energy Efficiency in SMEs and Large Companies in the Industrial Sector (Programa de Ayudas para Actuaciones de Eficiencia Energética en PYME y Gran Empresa del Sector Industrial): The aim of this funding programme is to promote the implementation of energy efficiency measures identified within energy audits as well as the implementation of energy management systems both in large companies and SMEs. For the implementation of an energy management system the minimum eligible investment is EUR 30,000. The implementation of energy efficient technology is funded in cases with a minimum eligible investment of EUR 75,000. The deadline for submitting applications in the current call will be 5 May 2016 (as long as budget is available). This programme initially had a maximum budget of EUR 49,016,421 funded by the National Energy Efficiency Fund.²⁷⁴

2.1.28.3. Exchange mechanisms

No exchange mechanisms according to the definition applied in this study were identified.

2.1.28.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Spain is provided in Table 58. The Spanish Government will adopt the national legislation soon.

2.1.29. Sweden

The responsibility for the implementation of the EED in Sweden formally lies with the Ministry of Enterprise, Energy and Communications (Näringsdepartementet), but has been delegated to the Ministry of the Environment and Energy²⁷⁵. The most recent official Swedish communication on the state of the national implementation of Article 8 is provided in the third Swedish NEEAP published in April 2014.²⁷⁶

In general, Sweden has a long tradition of programmes for improving energy efficiency through energy audits and energy management systems. For example, the Swedish programme for energy efficiency in energy intensive industries was introduced in 2004, and Swedish experiences with management standards also played an important role with regard to the introduction of the international standard ISO 50001 on energy management systems. Another earlier example is the Swedish Environmental Code (Miljöbalk), which entered into force at the beginning of 1999 (Law 1998:808) by unifying the rules from 15 different Swedish acts into one comprehensive piece of legislation. It is a collection of fundamental environmental rules that are further detailed by Governmental ordinances.²⁷⁷ According to the Environmental Code, all persons shall save energy and primarily rely on renewable energies. To do this, they are expected to analyse their energy consumption, identify relevant action and

²⁷⁴ Ministerio de Industria, Energía y Turismo (2015): Programa de ayudas PYME y gran empresa sector industrial. <http://www.idae.es/index.php/relcategoria.4037/id.856/relmenu.449/mod.pags/mem.detalle>. Accessed: 17.08.2015.

²⁷⁵ Personal communication by Mrs. Martina Berg (Swedish Energy Agency) of 17.09.2015.

²⁷⁶ Swedish Government (2014): Sweden's Third National Energy Efficiency Action Plan. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_sweden.pdf. Accessed: 12.06.2015.

²⁷⁷ Government Offices of Sweden (2015): The Swedish Environmental Code. Online: <http://www.government.se/legal-documents/2000/08/ds-200061/>. Accessed: 31.07.2015.

continuously implement reasonable measures. Authorities may issue a request that a corresponding analysis is carried out and may require a company to implement reasonable measures.²⁷⁸ Though some energy audits and their recommendations have been reported as implemented as a consequence of the Environmental Code²⁷⁵, this code is not considered as a specific instrument relevant in the context of this study due to its general nature.

Table 59 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Sweden. These instruments are further detailed below.

Table 59: Overview of instruments in Sweden.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Energy audit vouchers | | • | • | | | | | • | |
| (Programme for energy efficiency in energy intensive industries) | (•) | (•) | | (•) | | | | (•) | |
| Support scheme for energy efficiency investments | | • | • | • | | | | • | |
| Energy management system light | | • | | • | | | | | • |
| Hackefors model | | • | | | • | | | | • |
| (•): programme discontinued, but still running for some companies until 2017 | | | | | | | | | |

2.1.29.1. Energy audits

Energy audits in large companies: The obligations on large companies under Article 8 of the EED have been transposed into national legislation through the law on energy audits in large companies (SFS 2014:266) in conjunction with regulation SFS 2014:347 on energy audits in large companies. The Swedish Energy Agency is the supervising authority for energy audits in large companies in Sweden. A set of instructions by the Swedish Energy Agency (STEMFS 2014:2) provides further specifications for the implementation and reporting of energy audits in large companies.

- **General definition:** In the Swedish interpretation of Article 8 of the EED, an explicit definition of large companies is provided. According to this definition, large companies are those that have at least 250 employees and a turnover above EUR 50m or a balance sheet total exceeding EUR 43m²⁷⁹ in the most recent ap-

²⁷⁸ Swedish Energy Agency (2015): Krav på energihushållning enligt miljöbalken. Online: <http://www.energimyndigheten.se/Foretag/Energihushallning-enligt-miljobalken/>. Accessed: 10.08.2015.

²⁷⁹ SFS 2014:266,§2.

proved accounting period.²⁸⁰ Thus, the Swedish legal definition differs from the EU interpretation which links the employment and financial criteria by an 'and/or' relationship. In consequence, some companies that are considered as large under the EU definition may not be seen as large according to the Swedish definition. The priority given to the employee threshold as decisive criterion in Sweden originates from the explanation given in No. 22 of the Guidance Note on Article 8, which states that the "number of employees is the main criterion for determining whether an enterprise is an SME." The reasoning behind this interpretation is also that small financial companies with high turnover/balance sheet total will be excluded from the obligation.²⁸¹

- **Scope:** There are no exemptions from the obligation for large enterprises in Sweden. Both profit-oriented and non-profit organisations providing goods and services are subject to the obligation of carrying out audits. This also includes organisations of the state, of counties or municipalities.²⁸⁰ With regard to municipalities, there was a discussion in Sweden concerning whether municipalities should be treated as a company group or not. Municipalities often include public administration, schools and health care, but also economic activities such as energy production or letting of apartments. It was decided that only the economic parts of the municipality were to be considered when determining if they are large companies or not.²⁷⁵ According to the third Swedish NEEAP, approximately 1,500 companies in Sweden have more than 250 employees following the definition of the EED.²⁸² Many of the companies under the former PFE programme fall under the categorisation of large companies. Therefore it is estimated that at least around 100 companies already comply with the legislation.²⁷⁵
- **Exemptions:** Companies carrying out an energy audit within a certified energy or environmental management system in line with an international ISO (e.g. ISO 50001), European EN or Swedish SS standard do not need to carry out audits if the certified management system is implemented and if energy audits are already carried out within this system. For mandatory audits outside of management systems, reporting on the audit results is required by the first quarter of 2017. The deadline for reporting on the intended implementation plan is 5 December 2015.
- **Deadlines:** The Swedish implementation requires large companies to conduct an energy audit by 5 December 2015 and at least every four years thereafter. Any energy audit carried out after 4 December 2012 can contribute to fulfilling this obligation if it meets the requirements set out in the law and in the corresponding guidance documents on mandatory audits.²⁸⁰ Until the deadline in December, all large companies required to carry out an energy audit have to report on this and need to provide details on the intended energy audit. The first step is due by 5 December 2015. The second deadline is the first quarter of 2017: By this date, companies actually have to have carried out the audit and reported data from the audit to the authorities.
- **Multi-national companies:** According to the Swedish interpretation of Article 8, companies with activities in several MS are subject to several pieces of national legislation concerning energy audits. The criterion for being covered by the na-

²⁸⁰ Swedish Energy Agency (ed.) (2015): Energiekartläggning i stora företag - Frågor och svar. 2015-02-16. Online: <https://www.energimyndigheten.se/Global/F%c3%b6retag/Energikartl%c3%a4ggning%20stora%20f%c3%b6retag/Fr%c3%a5gorochSvar150216.pdf>. Accessed: 19/06/2015.

²⁸¹ Personal communication by Mrs. Martina Berg (Swedish Energy Agency) of 27.07.2015.

²⁸² Swedish Government (ed.) (2014): Sweden's Third National Energy Efficiency Action Plan. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_neeap_en_sweden.pdf. Accessed: 12.06.2015.

tional legislation is the location of the site. That means that sites located in Sweden have to provide information on the audit to the Swedish authorities, while it is expected that sites from the same group in other countries report to the local authorities there.²⁸⁰ Experience shows that the determination of whether an SME in Sweden actually belongs to a multi-national company that is subject to the obligation is very challenging for the authorities. This is especially the case due to the very varied ownership structures present in many companies. Often, a case-by-case analysis has to be carried out.²⁸¹

- **Multi-site companies:** In general, an energy audit must be based on a site visit in Sweden. Exemptions for groups with multiple sites are possible if the audit still provides a reliable picture of the company's overall energy demand. Deviations may only occur if the energy demand across the sites is expected to be very similar, and if the deviation is well justified in the audit report. Internal reporting in the company should be done at the level of detail required for the analysis. Reporting to the authorities, however, is expected to be carried out at group level.²⁸⁰ If a company is considered as a large company, then the entire company has to be audited.²⁸⁰ In the case of multi-national companies, sites in Sweden are expected to report on the implementation of audits to the Swedish authorities.
- **Minimum coverage:** In Sweden, the requirement for the coverage of energy consumption by the energy audit is based on the concept of providing a representative picture of total energy use in the company, and the ability to identify energy efficiency measures. The interpretation of the term 'representative' is considered to be variable depending on the type of company. This provides companies with flexibility with regard to the scope, delimitation and level of detail of the audit as long as they provide a representative overview of their energy demand and related savings opportunities.²⁸⁰ The entire energy demand of a company must be covered, even if some of its sites are quite small in terms of energy demand. However, they may be subject to a less detailed analysis if the overall assessment is not substantially affected. There is no specific minimum value in terms of the energy consumption for determining a representative picture in Sweden. Generally, it is expected that companies sufficiently analyse large energy consumers and good saving opportunities and report this in a specific and transparent manner. More detailed information will be provided by a guideline that will be published in September 2015.²⁸¹
- **Penalties for non-compliance:** In the case of non-compliance with the regulation, the Swedish Energy Agency has the option to impose fines. The penalty will be calculated as a percentage of the company's turnover.²⁸⁰ The level of penalties is not fixed and will depend on the degree of non-compliance and the economic situation of a company. Penalties are expected to exceed the cost of implementing an energy audit. Before proceeding to penalties, the authorities will first try to engage in dialogue with the company.²⁸¹
- **Specific provisions for buildings:** According to the law and the Swedish implementation guideline, a stand-alone energy audit for a building is not sufficient to meet the requirements of the mandatory energy audit for large companies. This is justified by the different coverage and focus of audits in buildings, and follows the general logic that the company that influences energy demand is liable for an audit. The responsibility for the audit thus lies with the company that has control of the energy consumption. That means if a building is rented to a company as a tenant, the heating system, for example, does not need to be audited by the tenant. In that case, the responsibility for the audit that concerns the heating system lies with the landlord, as long as the landlord is a company that is subject to the man-

andatory audits.²⁸⁰ In general, it is expected that many case-by-case decisions will be necessary concerning the implementation of building audits.²⁸¹

- **Specific provisions for transport:** As for buildings, the energy audit only has to cover the transport activities of a company if it operates the transportation on its own. Transport that is provided to a company as a paid service by a third party does not need to be covered.²⁸⁰ It has not yet been decided how cross-border transportation activities (e.g. shipping abroad) will be accounted for in the representative consumption of a company under the Swedish scheme.²⁸¹
- **Monitoring:** Companies are not obliged to provide the entire audit report to the supervising authority but can provide a summary of the information. However, the Swedish Energy Agency may review the entire report and may carry out a site visit to verify the report on a voluntary basis.^{275,280} Companies are not formally obliged to implement measures listed in the audit recommendations, but some progress is expected in terms of the implementation of energy measures in the period between two mandatory audits.²⁸¹

Energy audit vouchers (Förordning om statligt stöd till energikartläggning 2009:1577):²⁸³ In 2010, the Swedish government decided to introduce a support scheme for energy audits (2009:1577). A revision (Law 2014:352) of the corresponding law took place in 2014, to align with the EED, and this entered into force on 1 January 2015.²⁸⁴ Under this scheme, companies fulfilling certain criteria can obtain financial support for carrying out energy audits. A set of recently revised instructions by the Swedish Energy Agency (STEMFS 2015:1) provides further details on the requirements for the energy audits and on reporting. Since the revision at the beginning of 2015, the programme specifically addresses SMEs i.e. its participants are required not to be covered by mandatory audits. Previously, however, the programme was also open to large companies; by February 2014, approximately 5% of the participating companies under this scheme were large ones.²⁷⁶ The aim of the scheme is to enable companies to analyse energy demand. It covers all activities including buildings and transport, will show how energy demand is distributed across a company, and provide advice on how to increase the energy efficiency of processes and equipment. Companies eligible for support are those involved in the primary production of agricultural products with at least 100 livestock units and all other companies with a final energy demand exceeding 0.3 GWh/year (formerly 0.5 GWh/year). Companies that are building owners and have to carry out an energy audit under Swedish Law 2006:985, companies that participate in the Swedish programme for energy efficiency improvements (PFE: programmet för energieffektivisering) under Law 2004:1196 and (large) enterprises that need to carry out compulsory audits under Law (2014:266, see above) are excluded.²⁸⁵ Under this programme, a subsidy of 50% of the cost of an energy audit is provided to companies up to a maximum of SEK 50,000 (approximately EUR 5,500; formerly SEK 30,000). This sum may also include staff costs of the companies at a rate of up to SEK 600 per hour plus social fees.²⁸⁶ From 2010 to 2014, approximately 1,000 companies applied for this type of support.²⁸⁷ Approximately 50% of these be-

²⁸³ Swedish Energy Agency (ed.) (2015): Stöd till energiekartläggning. Online: <https://www.energimyndigheten.se/Foretag/Energieffektivisering-i-foretag/Energikartlaggningscheck---ett-stod-for-energikartlaggning/>. Accessed: 18.06.2015.

²⁸⁴ Swedish Energy Agency (ed.) (2015): Konsekvensutredning avseende förslag till reviderade föreskrifter i anslutning till förordningen om statligt stöd till energikartläggning. Online: https://www.energimyndigheten.se/Global/F%c3%b6retag/Energikartl%c3%a4ggningscheckar/Remiss%20EKC2/Konsekvensutredning_v2.pdf. Accessed: 18.06.2015.

²⁸⁵ SFS 2014:352.

²⁸⁶ STEMFS 2015:1, §7.

²⁸⁷ Roughly 1,000 companies are listed in the list of companies that requested support according to Swedish Energy Agency (ed.) (2015): Företag som sökt stödet 2010-2014. Online:

long to industry, 17% to the real estate sector, 11% to the agricultural sector and 10% were trading companies.²⁸⁴

2.1.29.2. Energy management systems

Programme for energy efficiency in energy intensive industries (Programme för energieffektivisering i energiintensiv industri): The Swedish Programme for Energy Efficiency in Energy Intensive Industries (PFE) is a support scheme that provides a financial incentive for introducing energy management systems in energy intensive companies. The programme primarily aims to reduce electricity consumption in energy intensive companies. It was started in 2004 in the wake of an increase in electricity taxes for industry in Sweden.²⁸⁸ It is formally anchored in Law 2004:1196.²⁸⁹ The PFE is supervised by the Swedish Energy Agency and participation in the PFE takes five years. Companies eligible for participation have to be energy-intensive industrial companies using electricity in production. To participate, these companies should be able to meet further requirements specified in the corresponding law. They are, for example, required to introduce a certified energy management system corresponding to requirements in the law. Within the framework of the programme, eligible companies receive a relief in electricity taxes of SEK 5 per MWh (approximately EUR 0.55/MWh). In the first period of the programme running from 2004 to 2009, approximately 110 companies participated.²⁹⁰ The PFE programme was discontinued for new participant from the beginning of 2013 by Law 2012:686. As the programme is still maintained for companies that registered up to the end of 2012, it will continue for these companies and finish by the end of 2017 at the latest. Most of the companies, however, should actually have concluded earlier, more specifically by mid-2014.

Support scheme for energy efficiency investments (Stöd till studier inför energieffektiva investeringar): Another Swedish scheme related to energy management is the support scheme for energy efficiency investments. Under this scheme, activities in three areas can receive financial support. These areas include the improvement and optimisation of existing technologies (Teknikutveckling och optimering av befintlig teknik), the measurement and visualisation of energy demand (Mätning och synliggörande av energianvändning) and systematic and structured work on efficiency improvements (Systematiskt och strukturerat energiarbete).²⁹¹ The latter area in particular is relevant for energy management as it will help companies to analyse how to best deal with energy efficiency improvements in a systematic and structured way and to determine which investments are required in systems or services that sustain these activities. Such systems or services comprise, for example, IT systems for data management, for the follow-up of energy management or for implementing simplified or

https://www.energimyndigheten.se/Global/F%c3%b6retag/Energikartl%c3%a4ggningsst%c3%b6det%202015-2020/F%c3%b6retag%20som%20s%c3%b6kt%20energikartl%c3%a4ggningsst%c3%b6det%202010-2014_150717.xlsx. Accessed: 10.08.2015.

²⁸⁸ Swedish Energy Agency (ed). (2013): Swedish experiences from Energy Management Systems in industry. Online:

https://www.energimyndigheten.se/Global/Internationellt/BEE%20Indien/ET2013_14_energy_management_systems_web.pdf. Accessed: 18.06.2015.

²⁸⁹ Swedish Energy Agency (2015): Program för energieffektivisering i energiintensiv industri (PFE). Online: <http://www.energimyndigheten.se/sv/Foretag/Energieffektivisering-i-foretag/PFE/>. Accessed: 18.06.2015.

²⁹⁰ Energimyndigheten (ed.) (2011): Programmet för energieffektivisering. Erfarenheter och resultat efter fem år med PFE. Online: <https://energimyndigheten.a-w2m.se/Home.mvc?ResourceId=2516>. Accessed: 18.06.2015.

²⁹¹ Swedish Energy Agency (2015): Stöd till studier inför energieffektiva investeringar. Online: <http://www.energimyndigheten.se/Foretag/EU-stod-till-sma-och-medelstora-foretag/Stod-till-studier-infor-energieffektiva-investeringar-/>. Accessed: 10.08.2015.

certified energy management systems.²⁹² The activities in this area are based on a three level approach where the first level is a starting point for systematically working with energy management and the third and highest level is a system that fulfils the requirements of ISO 50001.²⁹³ The funding scheme is open to SMEs. Small companies with less than 50 employees can apply for funding of up to 70% of the total project costs, while medium-sized companies can obtain funding of up to 60% of the eligible costs. However, prior to receiving funding, companies have to have carried out an energy audit that complies with the rules set out for obtaining a funding for an audit in the framework of the SEA's energy audit support scheme. The scheme is supported by funds from the European Regional Development Fund.²⁹¹

Energy Management System Light - EnMS light (Energieledning light): The EnMS light tool is a guide that can be used interactively to implement a simplified energy management system. Its main purpose is to assist SMEs operating in the engineering industry in reducing their energy demand. The guide has been developed in the ENIG network, a cooperation of Swerea Swecast Swerea IVF and FSEK. The ENIG network has also set up a benchmarking database²⁹⁴ with data from more than 250 companies.²⁹⁵ Approximately one hundred companies have implemented EnMS light, often in the context of specific projects. Though the number is relatively small, energy savings achieved by the introduction of this system in companies are considered as quite encouraging.²⁸¹

2.1.29.3. Exchange mechanisms

Hackefors Model: Sweden makes use of a commercial network approach for companies called the Hackefors Model. The model is based on similar principles to the Swiss EnergyModel and the German LEEN network activities, but is less rigorously structured than the LEEN-model. The Hackefors Model was introduced in 1996.²⁹⁶ Within the framework of the model, similar SMEs, e.g. from the same sector, share experiences and expenditure information for introducing a management system.²⁹⁷ The model itself is trademarked and operated by the private company Altea AB, which sells the Model as a service and provides related consultancy and coordination. The overall aim of the model is to help SMEs in improving their environmental performance, and to implement related management systems, e.g. ISO 14001 or EMAS. The organisation of the activities is centred around a coordinator whose tasks include the provision of documentation, including information about legal requirements, the organisation of network meetings and the planning of environmental education. The coordinator also heads a steering committee with representatives from every company. The steering committee meets regularly to develop the environmental management system and it also deals with environmental auditing.²⁹⁶ The original Hackefors network consisted of 26 companies that implemented a joint environmental management system. In 2002,

²⁹² Swedish Energy Agency (ed.) (2015): Område: Systematiskt och strukturerat energiärbete. Online: <http://www.energimyndigheten.se/Foretag/EU-stod-till-sma-och-medelstora-foretag/Stod-till-studier-infor-energieffektiva-investeringar-/Omrade-Systematiskt-och-strukturerat-energiarbete/>. Accessed: 10.08.2015.

²⁹³ Energiemyndigheten (ed.) (2014): Stegvis införande av systematiskt energiärbete. Vägledning för att långsiktigt effektivisera energie användningen. Online: <https://energimyndigheten.a-w2m.se/FolderContents.mvc/Download?ResourceId=2958>. Accessed: 10.08.2015.

²⁹⁴ See: <http://enig.se/energiinformation/nyckeltalsdatabasen/>. Accessed: 10.08.2015.

²⁹⁵ Swedish Energy Agency (ed.) (2013): Swedish experiences from Energy Management Systems in industry. Online: https://www.energimyndigheten.se/Global/Internationellt/BEE%20Indien/ET2013_14_energ_y_management_systems_web.pdf. Accessed: 18.06.2015.

²⁹⁶ Paramonova, S.; Backlund, S.; Thollander, P. (2014): Swedish energy networks among industrial SMEs. Proceedings of the eceee Industrial Summer Study 2014, pp. 619-629.

²⁹⁷ Altea (ed.) (2015): The Hackefors Model. Online: <http://altea.se/en/the-hackefors-model/>. Accessed: 10.08.2015.

the model was used by 24 districts, with more than 400 SMEs achieving certification.²⁹⁸ More recent information indicates a total of more than 1,900 achieved certificates.²⁹⁹ Though originating from a focus on environmental management systems, especially EMAS, the Hackefors Model is also considered to be an interesting approach for establishing energy management systems.²⁹⁸

While the Hackefors Model is the only Swedish exchange mechanism relevant to the objectives of this study, information on best practice examples and guidance is also provided in several places. For example, the Swedish Energy Agency provides a bundle of information to companies, e.g. guidelines but also regular news updates and seminars.

2.1.29.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in Sweden is provided in Table 60. A reporting system for mandatory audits of large companies will be introduced in October 2015.³⁰⁰ After summer 2015, the Swedish Energy Agency will provide a guideline for companies on how to determine a representative picture of their energy consumption. In addition to this guideline, an analysis of IT tools for supporting companies during energy audits is currently being prepared.³⁰¹

²⁹⁸ Thollander, T.; Palm, J. (2013): *Improving Energy Efficiency in Industrial Energy Systems. An Interdisciplinary Perspective on Barriers, Energy Audits, Energy Management, Policies, and Programs*. London: Springer.

²⁹⁹ BIO Intelligence Service (ed.) (2009): *Summary Brochure from Hackefors Model to EMAS*. Online: http://ec.europa.eu/environment/emas/pdf/StepUp/EMASGuidelines_BIO_FinalSummaryBrochure_HackeforsModel.pdf. Accessed: 10.08.2015.

³⁰⁰ Swedish Energy Agency (ed.) (2015). *Nyhetsbrev. Energikartläggning i stora företag*. No. 3 of June 2015. Newsletter.

³⁰¹ Swedish Energy Agency (ed.) (2015): *Workshop med energiintensiv och tillverkande industri*. Online: <http://www.energimyndigheten.se/Foretag/Energikartlaggning-i-stora-foretag/Informationsmoten-och-workshops-/Workshop-med-energiintensiv-och-tillverkande-industri/>. Accessed: 18.06.2015.

Table 60: Summary for the implementation of Article 8 in Sweden.

| Large enterprises | | |
|------------------------------------|---|--|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Article 8 transposed by law on energy audits in large companies (SFS 2014:266) in conjunction with regulation SFS 2014:347 and instructions by the Swedish Energy Agency (STEMFS 2014:2) Further interpretation in FAQ document |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Large companies have at least 250 employees <u>and</u> turnover above EUR 50m or balance sheet total exceeding EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Parent company is liable for implementation, national parts of company have to report to Swedish authorities |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> No specific instruments for large companies in place |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Compliance possible by standardised and certified energy or environmental management system with audit No exemptions, but discussion on how to interpret municipalities |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No detailed information available; according to estimates, at least roughly 100 companies from the PFE programme already comply with implementation |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> SEA collects basic set of information from audits via IT tool, but also may review entire report Planned visits at selected sites to verify findings |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> No fixed penalties; to be decided upon by severity of non-compliance and financial situation of company |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> Establishment of support schemes and information exchange via several instruments and communication channels |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Funding programmes for audits by programme "Energy audit checks" Financial support for implementation via "Support scheme for energy efficiency investments" |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> Instruments for provision of information (EnMS light) Financial support via "Support scheme for energy efficiency investments" Additionally the privately operated Hackefors Model |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Dialogue/campaign toward SMEs in connection with Energy audits checks |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> Distribution of information via various channels (e.g. website, newsletter, seminars) |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Various business and trade organisations representing SMEs Regional local authorities on energy matters (energy offices) |

2.1.30. United Kingdom

The UK government implements the EED under the responsibility of the Department of Energy and Climate Change (DECC). To comply with Article 8 of the EED, the UK Government passed the Energy Savings Opportunity Scheme Regulations on 26 June 2014.³⁰² This legislation introduced requirements for large enterprises to undertake mandatory energy audits or implement energy management systems and came into force on 17 July 2014 (Energy Savings Opportunities Scheme (ESOS)). Subsequent information was provided by DECC through a Guide to ESOS³⁰³ in September 2014. The Environment Agency is the UK-wide administrator for ESOS, and is responsible for its enforcement and regulation in England. Other UK regulators are responsible for enforcement and regulation of businesses within their respective jurisdictions (Natural Resources Wales, Northern Ireland Environment Agency and the Scottish Environment Protection Agency). The Environment Agency first issued further clarifications on the DECC guidance on complying with the ESOS scheme in February 2015 and has since updated the guidance, with version 3 issued in July 2015.³⁰⁴

Prior to this regulation, the majority of instruments in the UK aimed at promoting energy efficiency had focused on the industrial sectors and enterprises that have a large energy consumption. These instruments primarily provided a financial incentive to enterprises, either through taxation or permitting mechanisms, however none directly required the implementation of energy audits or energy management systems. The only regulatory instrument mandating energy audits currently in force is ESOS. Table 61 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in the UK. These instruments are further detailed below.

Table 61: Overview of instruments in the United Kingdom.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Mandatory energy audit | • | | • | | | • | | | |
| Climate Change Agreements | • | • | | • | | | • | | |

2.1.30.1. Energy audits

Mandatory energy audits (Energy Savings Opportunity Scheme Regulations 2014 (No. 1643)): To comply with Article 8 of the EED the UK Government passed the En-

³⁰² Department for Energy and Climate Change (DECC) (2014): The Energy Savings Opportunity Scheme Regulations (2014). Online: http://www.legislation.gov.uk/ukxi/2014/1643/pdfs/ukxi_20141643_en.pdf. Accessed: 16.10.2015

³⁰³ DECC (2014): Guide to ESOS. Online: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/405078/20140901_-_ESOS_Good_Practice_Guidance_v1_1.pdf. Accessed: 16.10.2015

³⁰⁴ Environment Agency (2015): Complying with ESOS. Online: <https://www.gov.uk/government/publications/comply-with-the-energy-savings-opportunity-scheme-esos>. Accessed: 16.10.2015

ergy Savings Opportunity Scheme (ESOS) Regulations on 26 June 2014.³⁰² These regulations came into force on 17 July 2014 and have been supported by guidance documents produced by DECC³⁰³ which are now owned and updated by the Environment Agency.³⁰⁴ The following description highlights the particular aspects of the transposition of Article 8 in the UK.

- **General definition:** Large enterprises are specifically defined within the ESOS regulations,³⁰⁵ as being an undertaking which either (a) employs at least 250 persons, or (b) has an annual turnover in excess of EUR 50 million turnover and an annual balance sheet of EUR 43 million. This provides a clear definition and in later guidance³⁰³ it has been clarified that the “in excess” statement applies to both aspects of the financial criteria. The regulations also confirm that the criteria should be applied to all overseas employees directly employed by the company. In the case of corporate groups, where one large enterprise meets the threshold in the UK, then the entire UK corporate group is deemed in scope of the regulatory requirement.
- **Scope:** The regulations do not apply to publicly funded bodies, however, where an enterprise is funded by both public and private monies (e.g. universities) they may need to participate.³⁰⁶ In the UK approximately 9,400 organisations are covered by the regulation.³⁰⁶
- **Exemptions:** Enterprise that implement an energy management system and have it certified to ISO 50001 by the 5 December deadline are considered compliant with the ESOS regulations. The energy management system must cover the same minimum level of energy consumption as the energy audit requirement, i.e. 90% of total energy use. Enterprises can use a mix of energy audits and energy management systems to meet the 90% minimum requirement.³⁰⁴
- **Deadlines:** The deadline for carrying out an energy audit is the 5 December 2015. Companies that decided to implement an energy management system instead of undertaking an energy audit must also complete certification to ISO 50001 by the same deadline. Audits are then required every four years.
- **Multi-national companies:** The qualification thresholds for ESOS are based on all group activities of an enterprise based in the UK or based overseas, but do not take into account subsidiaries registered in other countries, i.e. a UK entity must take into account overseas employees that are direct employees, i.e. not employed through subsidiaries registered in another country. Therefore, any company that has a UK registered entity that meets the thresholds must comply. UK operations of a large multi-national company only need to comply with ESOS if the UK activities registered meet the large enterprise definition. Therefore, UK enterprises that would be classed as SMEs in isolation, who are part of a large corporate group outside the UK do not need to participate in the scheme. The highest UK parent company should lead on compliance for all activities of a group based in the UK, but can choose to ‘disaggregate’ for the purposes of compliance.³⁰²
- **Multi-site companies:** Large enterprises can undertake audits of a sample of their sites and do not need to audit every site/activity/facility. The sample must be representative of the business. Whilst ‘representative’ is not defined, the guidance states that “In a compliance audit the regulators will look for well-reasoned and

³⁰⁵ The Energy Savings Opportunity Scheme Regulations (2014). Online:

http://www.legislation.gov.uk/ukxi/2014/1643/pdfs/ukxi_20141643_en.pdf Accessed: 16.10.2015

³⁰⁶ DECC (2014): Energy Saving Opportunity Scheme Impact Assessment, DECC0142, DECC 24/06/2014

documented justifications for the approach you took and why conclusions from your sample of site visits would be applicable to the other sites covered in the sample".³⁰⁴

- **Minimum coverage:** The energy audit has to cover a minimum of 90% of the total energy consumption of an enterprise. The total energy must include all energy used in stationary applications (buildings, processes etc.) and transport energy for which the enterprise is responsible.³⁰⁴
- **Penalties for non-compliance:** A failure to comply with the energy audit obligation can result in a fine of between EUR 6,875 (5,000 GBP) and EUR 68,750 (50,000 GBP), depending on the nature and severity of the non-compliance.³⁰⁴ In addition a further EUR 55,000 (40,000 GBP) could be levied (EUR 688 (500 GBP) per day for 80 days) for continued non-compliance.³⁰⁴ These fines are applied to the large enterprise.
- **Specific provisions for buildings:** All energy used in buildings is included in ESOS. In relation to multi-tenanted buildings and landlord-tenant relationships, under ESOS the responsibility to include energy within an organisation's total energy consumption calculation is determined by whether the participant is supplied with that energy and consumes that energy via the assets it holds or the activities it carries out. Where the participant supplies energy to another organisation and it is measured or can be reasonably estimated, that energy does not form part of their total energy consumption calculation. The landlord and tenant should determine between themselves who is responsible for the energy based on the information above and bearing in mind that the organisation with the ability to control the energy use should take responsibility for the energy supply and audit it to identify energy saving opportunities.³⁰⁴
- **Specific provisions for transport:** Transportation (road, rail, shipping, flights) has to be included in the energy audit. Only the energy consumption resulting from transportation activities directly connected to the purpose of business should be considered – i.e. transport by an external company is not included within the audit. Cross-border transportation by aircraft or shipping vessel has to be incorporated as well, if it begins or ends in UK.³⁰⁴ The transport energy includes all road and rail energy within the UK, and for aircraft and ships the energy used in any journey starting or ending, or both starting and ending, in the UK.³⁰⁴
- **Monitoring:** The detailed content of energy audits is currently not recorded centrally in UK. Participants in ESOS are required to submit details via an online registry regarding their compliance by 5 December 2015 and every four years thereafter. This will detail the enterprise and any linked corporate enterprises, details about the proportion of energy consumption covered, and the compliance route applicable to each. Companies will not be required to submit details about their total energy consumption, the results of the energy audit, or energy saving opportunities identified and/or implemented.³⁰⁴

Climate Change Agreements: The Climate Change Levy (CCL)³⁰⁷ is a tax on energy that is in place for non-domestic users in the UK. This tax is added to energy bills. A number of industrial sectors associations have established agreements for companies within their sectors with the UK government which allow them a discount on this levy in return for meeting agreed energy reduction targets. These are called the Climate

³⁰⁷ Climate Change Levy (2015): Online: <https://www.gov.uk/topic/business-tax/climate-change-levy>, Accessed: 19.10.2015.

Change Agreements (CCAs)³⁰⁸, and companies holding a CCA must reduce their energy consumption in line with these set targets through ongoing programmes of energy management.

The number of central programmes to support energy audits and energy management systems has declined over recent years. This is particularly highlighted by the reduced support to enterprises provide by the Carbon Trust to undertake audits and implement findings, which in the early 2000's resulted in thousands of audits per year across different sizes and types of enterprise. Resource Efficient Scotland has been established by the Scottish Government, through Zero Waste Scotland, and provides enterprises with support and advice on energy, water and waste efficiency. Companies can have audits undertaken and seek technical support to implement findings, as well as receiving guidance and training to undertake their own audits. Some of the support is free to SMEs and can also be supported by an SME loans scheme.³⁰⁹

DECC has recently published a guide to support SMEs with energy efficiency.³¹⁰ This guide sets out a number of low cost steps and measures that small businesses can undertake to help manage their energy bills.

2.1.30.2. Energy management systems

The CRC Energy Efficiency Scheme does not directly require energy audits or energy management systems, but encourages companies to implement and improve their management of energy use for the two main stationary fuels: electricity and natural gas. Companies that have an annual minimum electricity consumption of 6,000 MWh through mandatory half-hourly meters are required to participate. Companies must report all electricity and gas use, and buy and surrender 'allowances' relating to the emissions resulting from that fuel use. These allowances can be purchased from two separate sales each year - the earlier sale is at the beginning of the compliance year and allows companies to buy them at a cheaper rate, based on predicted emissions. Through these allowance sales, CRC incentivises energy management in two ways: (1) managing the amount of electricity and gas used each year will provide control over the quantity of allowances that it is necessary to buy; and (2) forecasting emissions for the year in advance, enables companies to buy allowances at a cheaper rate at the beginning of the year. Any shortfall in allowances at the end of the year must be compensated for by buying the additional allowances needed at a more expensive rate. Companies are therefore encouraged to understand and forecast their energy use accurately.

2.1.30.3. Exchange mechanisms

There are a number of UK energy efficiency networks that are facilitated by central or regional government funding. These include network and information exchange forums run by the Energy Saving Trust.³¹¹ The Energy Saving Trust works with businesses and the government to undertake research into energy efficiency, and runs a range of programmes to provide energy efficiency advice to SMEs and the domestic sector. This

³⁰⁸ Climate Change Agreements (2015): Online: <https://www.gov.uk/guidance/climate-change-agreements-2>, Accessed: 19.10.2015.

³⁰⁹ Resource Efficient Scotland (2015): SME Loans Scheme. Online: <http://www.resourceefficientscotland.com/content/sme-loans-scheme>, Accessed: 19.10.2015.

³¹⁰ DECC (2015): SME Guide to Energy Efficiency. Online: <https://www.gov.uk/government/publications/sme-guide-to-energy-efficiency>. Accessed: 19.10.2015

³¹¹ The Energy Saving Trust (2015): Online: <http://www.energysavingtrust.org.uk>. Accessed: 19.10.2015

includes the provision of tools and guidance to assist in the identification of energy saving opportunities.

Table 62: Summary for the implementation of Article 8 in UK.

| Large enterprises | | |
|------------------------------------|---|---|
| Framework | What legislation has the MS established for large enterprises? | <ul style="list-style-type: none"> Energy Saving Opportunity Scheme Regulations Compliance guidance documentation published by Environment Agency |
| | How are large enterprises defined? | <ul style="list-style-type: none"> Employs at least 250 persons, or has an annual turnover in excess of EUR 50m turnover and an annual balance sheet of EUR 43m |
| | How are multi-national companies and large enterprises dealt with? | <ul style="list-style-type: none"> Calculation of thresholds should be based on company activities based in the UK, plus any overseas employees that are not employed by entities registered overseas. |
| Implementation | What activities has the MS established to promote energy audits and management systems? | <ul style="list-style-type: none"> Energy Savings Opportunity Scheme |
| | What kind of compliance options and exemptions are granted? | <ul style="list-style-type: none"> Public sector exempt Enterprises with ISO50001 certified energy management systems in place by 5 December 2015 are exempt from undertaking audits |
| | To what degree have enterprises currently implemented the audits? | <ul style="list-style-type: none"> No evidence of how many mandatory audits have been undertaken in the UK at present. Over the past few years many thousands of energy audits have been completed |
| Enforcement | What administrative processes have been established to monitor compliance and impact? | <ul style="list-style-type: none"> EA will monitor compliance through an online registry. However, there is no obligation for companies to inform EA about the implementation of measures arising from a mandatory energy audit EA is obliged to carry out spot checks in terms of compliance and this will consider the implementation of energy efficiency measures |
| | What kind of penalties have been established for non-compliance? | <ul style="list-style-type: none"> Offence may lead to fines by the EA of up to EUR 68,750 (GBP 50,000), and potentially higher |
| Small and medium-sized enterprises | | |
| Audits | What kind of supporting framework has the MS established? | <ul style="list-style-type: none"> No formalised framework in place |
| | What support schemes for SMEs for energy audits and their recommendations are provided? | <ul style="list-style-type: none"> Energy Saving Trust provides SMEs with advice and support around energy audits and implementation. Regional programmes such as Resource Efficient Scotland also support |
| Management | What schemes have been introduced to help implement management systems? | <ul style="list-style-type: none"> No schemes established directly to support energy management systems |
| | How has the MS engaged with organisations representing SMEs? | <ul style="list-style-type: none"> Industry and sector associations are the main interaction with SMEs |
| Exchange | What specifically has been done to raise awareness? | <ul style="list-style-type: none"> No formalised approach |
| | What types of organisations can help to exchange information? | <ul style="list-style-type: none"> Various industrial and sector associations; other regional governmental and non-governmental organisations exchange energy efficiency information with SMEs and large enterprises |

2.1.30.4. Further implementation plan

A summary of the current activities related to the implementation of Article 8 in the UK is provided in Table 62.

2.2. Instruments in other countries

2.2.1. Canada

Canada's energy efficiency policy is supported by its provinces and territories which have committed themselves to a 20% improvement in energy efficiency by 2020 (compared to a 2008 base year). To help achieve this objective the energy efficiency policy mix is based on building codes, broader regulation of energy-consuming products, the establishment of green building policies for new government-funded facilities, support for home energy audits, and retrofit assistance.³¹²

In 2011 Canada initiated the ecoENERGY Innovation Initiative which is part of its Economic Action Plan. This initiative targets energy efficiency in industry and is designed to last five years and has \$268m of funding.

Table 63: Overview of instruments in Canada.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| ecoENERGY Efficiency for Industry program | • | • | | • | | | | • | |

2.2.1.1. Energy audits

No instruments were identified that explicitly address the implementation of energy audits.

2.2.1.2. Energy management systems

ecoENERGY Efficiency for Industry program: Under the umbrella of Canada's ecoENERGY Innovation Initiative this programme was initiated by the National Resources Canada (NRCan) Office of Energy Efficiency. It offers support to companies aiming to implement an energy management system in line with ISO 50001.³¹³ Within

³¹² Young, R.; Hayes, S.; Melly, M.; Vaidyanathan, S.; Kwatra, S.; Cluett, R.; Herndon, G. (2014): The 2014 International Energy Efficiency Scorecard. Report Number E1402. American Council for an Energy-Efficient Economy. Online: <http://aceee.org/sites/default/files/publications/researchreports/e1402.pdf>. Accessed: 03.12.2015.

³¹³ McBride, M. (2011): EcoENERGY Efficiency for Industry Program. Presentation. Online: https://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&ved=0ahUKEwj1psDXo7_JAhWJtRQKHT7iDN4QFghXMAY&url=http%3A%2F%2Fwww.ptac.org%2Fattachments%2F166%2Fdownload&us

this programme, NRCAN is providing a share of 50% of the costs, up to a maximum amount of \$25,000, for ISO 50001 related implementation pilots and energy assessments. Eligible costs may include professional fees, training and an energy audit. To achieve this funding, participating companies are required to provide a final report with details on measures undertaken to meet ISO 50001, e.g. energy baseline, energy performance targets, timeline for achievement of targets, monitoring and reporting procedures.³¹⁴

2.2.2. China

China is the country with the highest primary energy demand and CO₂ emissions worldwide.³¹⁵ In the period from 1996 to 2010, the energy demand of Chinese industry increased by 134%.³¹⁶ China's energy production in 2011 equalled about 102 EJ whereas the corresponding value for the EU-28 was about 34 EJ.³¹⁷ Coal and oil are the main sources of primary energy in China, holding a share of more than 90% of overall energy consumption.³¹⁸ The industrial sector is by far the largest energy consumer in China, with a share of about 70% of the country's energy consumption.³¹⁶

In the period from 1970 to 2001, energy use in China decreased annually by roughly 5% per unit of gross domestic product (GDP).³¹⁹ This was the result of ambitious central government energy efficiency programmes, in place since the 1980s, undertaken in cooperation with provincial and municipal authorities. This policy is reported to be mainly driven by strict control of industrial energy usage, information instruments, financial incentives and funding, education, training and propaganda as well as research and development and demonstration projects.³¹⁹ However, energy efficiency efforts remained at a low level as compared to other developing countries.³²⁰

In the wake of a rapid increase in China's energy demand after 2001, the government announced a 20% reduction target by 2010 as compared to 2005 levels. This resulted in reported improvements of 19.1% in terms of energy/GPD ratio.³²¹ To help achieve this goal, the Chinese government released a Medium and Long-Term Plan for Energy Conservation, which defines a set of top ten priorities and ten key projects.³²² A similar target to improve energy efficiency was set for the period of China's 12th Five-Year-

g=AFOjCNF-ktZVXxFnp8tOV_qUctvw9BvEqQ&bvm=bv.108538919,d.bGQ&cad=rja. Accessed: 03.12.2015.

³¹⁴ Institute for Industrial Productivity (2015): Industrial Energy Efficiency Policy Database. CA-3: ISO 50001 implementation Support. Online: <http://iepd.iipnetwork.org/policy/iso-50001-implementation-support>. Accessed: 03.12.2015.

³¹⁵ Lo, K. et al. (2015): Energy conservation in China's energy-intensive enterprises: An empirical study of the Ten-Thousand Enterprises Program. In: *Energy for Sustainability Development*, 27, pp. 105-111.

³¹⁶ Ke, J. et al. (2012): China's industrial energy consumption trends and impacts of the Top-1000 Enterprises Energy-Saving Program and the Ten Key Energy-Saving Projects. In: *Energy Policy*, 50, pp. 562-569.

³¹⁷ European Union (ed.) (2013): EU energy in figures. Statistical Pocketbook 2012. Online: https://ec.europa.eu/energy/sites/ener/files/documents/2014_pocketbook.pdf. Accessed: 19.08.2015.

³¹⁸ LBNL (ed.) (2014): Key China Energy Statistics 2014. China's Total Primary Energy Consumption by Source Shares (1985-2012). Lawrence Berkeley National Laboratory. China Energy Group. Online: http://eetd.lbl.gov/sites/all/files/key_china_energy_statistics_2014_online.final_.pdf. Accessed: 01.09.2015.

³¹⁹ Zhou, N. (2010): Overview of current energy-efficiency policies in China. In: *Energy Policy*, 38, pp. 6439-6452.

³²⁰ Qingyi, W. (2006): Energy Conservation as Security. In: *China Security (Summer 2006)*, pp. 89-105.

³²¹ Lu, H. et al. (2014): Energy assessments under the Top 10,000 Program – A case study for a steel mill in China. *Proceedings of the 2014 eceee Industrial Summer Study*. pp. 37-45.

³²² For further details, see: Zhou, N. (2010): Overview of current energy-efficiency policies in China. In: *Energy Policy*, 38, pp. 6439-6452; also: IIP (ed.) (2015): Industrial Efficiency Policy Database: CN-12: Ten Key Projects Program. Online: <http://iepd.iipnetwork.org/policy/ten-key-projects-program>. Accessed: 02.09.2015.

Plan from 2011 to 2015, aiming at a 16% reduction in the energy/GDP ratio by 2015 as compared to 2011, and a 17% reduction in the CO₂/GDP ratio.³²¹

To achieve these aims, China relies on various approaches. Due to its high share in energy demand, the industrial sector plays an especially important role in achieving these targets. China has therefore put in place various activities addressing this sector such as the development of industrial energy performance standards defining minimum requirements for existing and newly constructed plants for various industries³²³, the closure of small plants and the phase-out of outdated capacity³²⁴, the requirement for appraising the energy efficiency of new large industrial projects.³²⁵ One of the key activities is the Top-10,000 Energy-Consuming Enterprises Programme addressing industrial companies, which is closely related to energy audits and energy management.

Table 64 provides an overview of instruments identified for China which relate to energy audits, energy management systems and exchange mechanisms. With regard to the subsequent description of the instruments, it should be noted that details on energy efficiency policy in China tend to be scarce on an international level. Details are often provided by only a few secondary sources and it often remains unclear to what degree this information is still up-to-date. Additional complexity is added by the structure of programmes, as national programmes are partially extended or complemented by regional activities, e.g. by locally available subsidies. The subsequent description may therefore not capture all the subtleties of the different instruments.

Table 64: Overview of instruments in China.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|--|-------------------|----------------|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Top-10,000 programme | ● ¹ | ● ¹ | ● | ● | | ● | | | |
| Energy Efficiency Networks | (●) | (●) | | | (●) | | | | (●) |
| <p>●¹: inclusion based on energy demand (●): partially unconfirmed information</p> | | | | | | | | | |

³²³ IIP (ed.) (2015): Industrial Efficiency Policy Database. CN-4: Industrial Energy Performance Standards. Online: <http://iepd.iipnetwork.org/policy/industrial-energy-performance-standards>. Accessed: 02.09.2015.

³²⁴ IIP (ed.) (2015): Industrial Efficiency Policy Database. CN-5: Small Plant Closures and Phasing Out of Outdated Capacity. Online: <http://iepd.iipnetwork.org/policy/small-plant-closures-and-phasing-out-outdated-capacity>; also: CN-8: Guiding Statement on Overcapacity. Online: <http://iepd.iipnetwork.org/policy/guiding-statement-overcapacity>. Both accessed: 02.09.2015.

³²⁵ IIP (ed.) (2015): Industrial Efficiency Policy Database. CN-9: Energy Efficiency Appraisals for New Large Industrial Projects. Online: <http://iepd.iipnetwork.org/policy/energy-efficiency-appraisals-new-large-industrial-projects>. Accessed: 02.09.2015.

2.2.2.1. Energy audits

Top-10,000 programme: The Top-10,000 programme is a successor of the Top 1,000 Energy-Consuming Enterprises Programme launched in 2006, which addressed the largest 1,000 energy-intensive companies consuming each more than 5.275 TJ/year, and in total about 33% of China's energy demand. Reported savings from the original programme were 3.7 EJ. Due to its success, the Top 1,000 companies programme was expanded during the 12th Five-Year-Plan between 2011 and 2015 to become the Top 10,000 companies programme. This covers more than 15,000 industrial companies with a consumption above 293 TJ/year (10,000 tonnes of coal equivalent [tce]). Together these 15,000 companies are responsible for about two thirds of China's overall energy consumption. The aim of the programme is to achieve energy savings of 7.3 EJ in the period from 2011 to 2015 as compared to a baseline.³²¹ It should be noted that next to the national activities, regional activities have also been reported. For example, the Top-1,000 programme was extended in various provinces to add additional key-companies.³²⁶

In terms of activities, the programme contains various components that also closely relate to energy audits and management, though descriptions of the programme vary to some degree. In general, the Top-10,000 could be considered as an umbrella instrument for industrial facilities. The key elements of the programme are reported to include (a) setting up an energy saving working group in companies, (b) the establishment of a targeting and accounting system, (c) carrying out energy audits and the development of conservation plans in line with Chinese standard GB/T 17166, (d) the implementation of energy audit systems, (e) the utilisation of energy efficiency benchmarking, (f) the setup of energy management systems in line with Chinese standard GB/T 23331, (g) the expansion of training pilots for energy managers, (h) the implementation of an reporting system for energy utilisation, (i) the phase-out of outdated technologies and (j) the provision of special funding for retrofits and cooperating with energy-service companies to accelerate retrofits.³²⁷

As implied by this list, companies falling under the programme have to conduct an energy assessment. This assessment is carried out once and includes the typical elements of an energy audit, i.e. mapping of energy demand as well as identification of saving potentials and specific measures. If a company fails to pass a governmental review, a mandatory energy audit and adjustments/retrofits are required. According to an intermediary evaluation in 2012, about 10% of the evaluated companies failed to achieve their targets.³²¹ Under the former Top-1,000 companies programme, the submission of an energy audit report followed a guideline and the local government had to review the report within six months. In the case of a failure to meet the requirements, the company has to resubmit a report within three months.³²⁶ For the Top-1,000 companies programme, it has also been reported that failure to comply entails criticisms, a suspension in approving additional land-use and energy-intensive projects, and an exclusion from favourable policy exemptions. In the case of state-owned enterprises, company leaders are excluded from any awarding procedure, no matter how well the company performs in other areas.³²⁷ It remains unclear, however, whether these mechanisms are still in place for the Top-10,000 companies programme. In addition to the energy assessment, companies are also required to establish an energy management system.³²¹

³²⁶ Shen, B. (2012): Energy audit practices in China: National and local experiences and issues. In: *Energy Policy*, 46, pp. 346-358.

³²⁷ IIP (ed.) (2015): Industrial Efficiency Policy Database. CN-3a: Top-1000 Energy-Consuming Enterprises Program. Online: <http://iepd.iipnetwork.org/policy/top-1000-energy-consuming-enterprises-program>. Accessed: 02.09.2015.

In addition to the mandatory components of this programme, there are also some financial components. The Chinese Ministry of Finance provides rewards based on energy savings if energy saving projects are successfully implemented and exceed a minimum savings threshold of 147 TJ. The incentives amount to approximately EUR 30 per 30 GJ of energy saved (approximately RMB 270 per tce depending on the region). The support is only granted for the implementation of energy-saving activities, and is not available for those that must conduct mandatory activities under the Top-10,000 programme, e.g. conducting energy audits or using energy management.³²¹ Nevertheless, it has been reported that some local governments provide monetary incentives depending on the quality of the audit report, while others exclude companies from any governmental incentives if the report fails to meet the requirements.³²⁶

2.2.2.2. Energy management

The Top-10,000 companies programme addresses energy management in industrial companies. In 2014, the Chinese Ministry of Industry and Information Technology added to this by publishing a statement³²⁸ that deals with improving the supervision of activities relating to energy conservation in industry. This statement covers several areas addressing the improvement of supervision of energy-saving targets and regulations, which also include an improvement in supervision for developing and implementing energy management systems.³²⁹ It remains unclear whether this has additional implications beyond the requirements of the Top-10,000 programme. It should also be noted that various specific implementation guides for energy management systems in different sectors are being developed by China's National Institute of Standardisation.³³⁰

2.2.2.3. Exchange mechanisms

Energy Efficiency Networks: With regard to exchange mechanisms, one major instrument used in China appears to be the energy efficiency network model inspired by the German approach, although details on the implementation model appear to be scarce. A Chinese energy efficiency network pilot was setup in Changzhou in 2011 with 12 companies. In the same year, the number of networks was scaled up to 290 networks in 27 provinces and regions with a total of more than 3,000 participating companies.³³¹ In November 2013, a total of 573 energy efficiency networks with roughly 6,000 companies was reported. In 2012 alone, 1,386 network meetings and 1,802 implemented measures were reported, translating in annual electricity savings of 660 GWh.³³² Though likely, it remains unconfirmed whether an audit is mandatory (as in the German implementation) and what level of quality assurance has been achieved, considering the exceptionally fast implementation of the Chinese networks.

³²⁸ Ministry of Industry and Information Technology (2014): Ministry of Industry and Information Technology on the strengthening of industrial energy monitoring work. Online: <http://www.miit.gov.cn/n11293472/n11293832/n12843926/n13917012/15917066.html>. Accessed: 02.09.2015.

³²⁹ IIP (ed.) (2015): CN-10: Regulation on Energy Conservation Supervision. Online: <http://iepd.iipnetwork.org/policy/regulation-energy-conservation-supervision>. Accessed: 02.09.2015.

³³⁰ Wang (2012): EnMS Progress in China. Presentation. Dublin, Ireland. Online: http://www.seai.ie/News_Events/Previous_SEAI_events/Creating_the_Right_Environment_for_ISO_5001/Geng%20Wang.pdf. Accessed: 02.09.2015

³³¹ Yin, Y. (2014): Energy Efficiency Network – An effective approach to increase and scale up energy efficiency. Presentation. Online: http://www.lowcarbonfuture.net/media/filer_public/2014/07/15/yin_yuxia.pdf. Accessed: 31.08.2015.

³³² Wuppertal Institute (2015): 3.4.1. Examples from Germany and China. Online: <http://www.lowcarbonfuture.net/en/virtual-academy/good-practices-low-carbon-city-development/examples-germany-and-china/>. Accessed: 31.08.2015.

2.2.3. Japan

In recent years the Japanese energy efficiency policy mix has been considerably influenced by the Great East Japan Earthquake and the subsequent accidents at TEPCO's Fukushima Daiichi Nuclear Power Station. In 2014, the Japanese Cabinet decided to approve the new Strategic Energy Plan as the basis for the direction of Japan's new energy policy.³³³ The Japanese energy efficiency policy mix is based on different types of instruments, including regulatory and financial instruments (Table 65), which are described below. One of the core elements of the policy targeted at energy audits and energy management systems is the national Energy Conservation law which entered into force in 1979 (during the following decades this law was adjusted and improved several times).³³⁴ In addition, the Japanese energy efficiency policy focuses on energy efficiency standards for many electrical appliances and vehicles which have been established in the Top-Runner Program.

Japan is a member of the "Energy Management Action Network" (EMAK). This network consists of several national policy makers and industrial practitioners, from countries including China, Australia and the United States. The principal aim of this association is to exchange best practice energy management information in general as well as information regarding the design of policy instruments.³³⁵

Table 65: Overview of instruments in Japan.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|------------------------------|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Free Energy Audit | | • | • | | | | | • | |
| Mandatory energy management* | • | (•) | | • | | • | | | |

(•) may include also SMEs as it is based on energy threshold

2.2.3.1. Energy audits

Free Energy Audit for Small and Medium Sized Companies: By means of this programme the Japanese government offers free-of-charge energy audits to SMEs. These audits are conducted by governmental organisations, such as ECCJ (Energy Conservation Center Japan) and NEDO (New Energy and Industrial Technology Development Organisation). In the time period from 1999 to 2007 approximately 300 to

³³³ International Energy Agency (2014): Basic Energy Plan (2014). Online: <http://www.iea.org/policiesandmeasures/pams/japan/name-144082-en.php>. Accessed: 03.12.2015.

³³⁴ Nishiyama, H. (2013): Japan's Policy on Energy Conservation. Presentation. Online: <https://www.iea.org/media/workshops/2013/emak4/2NISHIYAMA.pdf>. Accessed: 03.12.2015.

³³⁵ Dahlgren, M.; Björkman, T.; Noda, F.; Ogawa, J.; Yamashita, Y.; Siciliano, G.; de los Reyes, P.; Kramer, C. (2014): Models for driving energy efficiency nationally using energy management. eceee Industrial Summer Study Proceedings, p. 101 – 112.

1,000 audits were conducted annually by ECCJ and approximately 40 to 100 energy audits were conducted annually by NEDO (in large facilities).³³⁶

2.2.3.2. Energy management systems

Mandatory Energy Management: The Japanese national Energy Conservation law makes energy management mandatory for companies with an annual energy consumption of 1,500 kilolitres (kl) or more (crude oil equivalent). This instrument is targeted at energy management actions in companies.³³⁷ The actions required include: (1) the assignment of a qualified “energy manager” in the company (both from operational and management level), (2) reporting activities, which include the measurement of energy use, flow, related equipment and CO₂ emissions, actions taken and plans for energy efficiency measures, (3) the company has to develop its own “standards for energy management” for its major energy consuming appliances.³³⁸

2.2.4. Norway

Together with Switzerland, Iceland and Liechtenstein, Norway belongs to the European Free Trade Association and is thus closely linked to the EU. In Norway, energy efficiency improvements have been addressed by various approaches in the past, e.g. by networking activities or by incentivising companies to introduce energy management systems by providing reductions on electricity taxes.³³⁹ Currently, the Norwegian government offers various funding opportunities to companies,³⁴⁰ relating to energy efficiency. These support programmes are run by ENOVA, a public enterprise owned by the Ministry of Petroleum and Energy. The instruments cover a range of different funding opportunities for the introduction of energy-efficient technologies but also address related topics. Financial support is, for example, provided to companies for pre-studies on in-depth preparative analyses on investments in energy efficient technologies in cases where large savings are available (resulting savings of at least 5 GWh/year).³⁴¹ The main instrument that could be identified as being directly related to energy audits, energy management systems and exchange mechanisms is funding provided for introducing energy management (Table 66). This is further detailed below.

2.2.4.1. Energy audits

No instruments were identified that explicitly address the implementation of energy audits.

³³⁶ Kimura, O. (2011): Promoting energy efficiency in industrial/commercial sector: Japanese Experience. Online: http://www.gispri.or.jp/english/symposiums/images110706/Mr_Kimura.pdf. Accessed: 14.12.2015.

³³⁷ Dahlgren, M.; Björkman, T.; Noda, F.; Ogawa, J.; Yamashita, Y.; Siciliano, G.; de los Reyes, P.; Kramer, C. (2014): Models for driving energy efficiency nationally using energy management. eceee Industrial Summer Study Proceedings, p. 101 – 112.

³³⁸ Nagata, T. (2013): Japan's Policy on Energy Conservation. Presentation Slide 5. Online: https://unfccc.int/files/bodies/awg/application/pdf/2_japan.pdf. Accessed: 03.12.2015.

³³⁹ See: Skriverhaug (2015): Program for energieffektivisering i industrien – 2004 – 2014. Online: <http://www.nve.no/no/Energi1/Energibruk-og-effektivisering/Program-for-energieffektivisering-i-energiintensiv-industri1/>. Accessed: 28.10.2015. It should be noted that a total of 18 companies participated in the programme.

³⁴⁰ Enova (ed.) (2015): Senter for søknad og rapportering. Online: <https://soknad.enova.no/startside.aspx>. Accessed: 27.08.2015.

³⁴¹ Enova (ed.) (2015): Program Støtte til forprosjekt for energiltak i industrien. Online: <http://www.enova.no/finansiering/naring/programtekster/program-prosjektstotte---industri/245/267/>. Accessed: 27.08.2015.

Table 66: Overview of instruments in Norway.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Funding for introducing energy management | • | (•) | | • | | | | • | |

(•): May include SMEs, as based on energy threshold

2.2.4.2. Energy management

Funding for introducing energy management (Støtte til introduksjon av energile-delse i transport, industri og anlegg)³⁴¹: This funding programme provides financial support to companies and thereby addresses the introduction of energy management in industrial companies, plants and the transport industry located in Norway. Eligible companies have to have an annual energy consumption equal to or above 1 GWh. The programme funds projects that help companies to carry out the required steps to establish a systematic process for assessing energy demand and improving their energy efficiency, including the acquisition of relevant tools and monitoring equipment. A project has to be anchored in management and has to be accompanied by a commitment to achieve a minimum 10% improvement on consumption of a specific energy type. The programme has two levels - simplified and ambitious. In both cases, the maximum share of funding is 50% of eligible costs and companies have to set a target of achieving energy savings of 10% within five years. For companies with a demand exceeding 50 GWh/year, the target is based on the energy demand for support processes. The documentation of the system, and the related results, will be followed up and monitored by ENOVA.

For the simplified level of the programme, an energy management system that is partially based on ISO 50001 must be established. This level is available to companies with an annual energy demand between 1 and 10 GWh and is supported by maximum funding of up to EUR 22,000 (NOK 200,000). For the ambitious level, an energy management system fully corresponding to ISO 50001 is required, but certification of the system is not. This level is available to companies with an annual energy demand equal to or exceeding 10 GWh. In this case, funding is provided up to EUR 110,000 (NOK 1,000,000) and the results have to be accompanied by an auditor declaration. In addition to the costs to acquire the necessary services and hardware, personnel in the company also receive funding, usually at a rate of approximately EUR 55 per hour (NOK 500).

It is worth noting that ENOVA runs a system entitled Industry Network, which is linked to the funding scheme.³⁴² This network mainly collects data that is used to generate energy benchmarks for different branches. A web-based tool based on this data helps companies in their energy management activities. Companies that receive funding under the above mentioned programme are obliged to report key figures to the net-

³⁴² Enova (ed.) (2015): Industrinett. Online: http://www.enova.no/upload_images/51E09B8D4C7B4F648CDA06C90D81E1BE.pdf. Accessed: 28.10.2015.

work for ten years on an annual basis. Companies can also import the data they submitted to the Norwegian Statistical Office.

2.2.4.3. Exchange mechanisms

No structured exchange mechanism could be identified for Norway. It should be noted that a networking approach has been relied upon in the past, mainly during the 1990s.³⁴³

2.2.5. Switzerland

On 25 May 2011, Switzerland decided to phase out nuclear power on a step-by-step basis and to build up a sustainable energy system. Energy efficiency is a key driver of this system. The energy saving potential in industry, commerce and the service sector is considerable, and is estimated to be 30-35% for process heat and 20-25% for drives and processes. With regard to information and communication technologies energy savings up to 35% are possible in the longer term. Existing instruments include voluntary target agreements with companies, especially in combination with an exemption from the CO₂ tax, and financial support instruments (particularly competitive tenders). In the context of the development of the Swiss Energy Programme there are additional flanking measures to support companies through information, advice and training. This includes a funding programme "Energetic Process integration/waste heat utilisation" which aims to support energy-intensive firms in implementing less financially attractive efficiency measures. SMEs (around 30,000 firms excluding micro-enterprises) are supported by the development of working tools and training opportunities for factory and process optimisation.³⁴⁴

Table 67 provides an overview of instruments directly related to energy audits, energy management systems and exchange mechanisms currently implemented in Switzerland. These instruments are further detailed below.

³⁴³ E.g. Helgerud, H.E.; Mydske H. J. (1999): Experience with Implementing Energy Management through Networking in Norway. Online: http://aceee.org/files/proceedings/1999/data/papers/SS99_Panel1_Paper71.pdf. Accessed: 28.10.2015; Espegren, K. A. (2002): AUDIT II: Country Report. Norway. Online: www.motiva.fi/files/1937/CR_Norway.pdf. Accessed: 27.08.2015.

³⁴⁴ Swiss Federal Office of Energy (2013): Botschaft zum ersten Maßnahmenpaket der Energiestrategie 2050 (Revision des Energierichts) und zur Volksinitiative «Für den geordneten Ausstieg aus der Atomenergie (Atomausstiegsinitiative)». Online: <http://www.admin.ch/opc/de/federal-gazette/2013/7561.pdf>. Accessed: 20.03.2015.

Table 67: Overview of instruments in Switzerland.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Canton de Vaud audit programme | • | • | • | | | | | • | |
| Voluntary target agreements | • | • | • | | | | • | | |
| Reimbursement of network charge | • | | • | | | | | • | |
| KMU Model | | • | | • | | | | | • |
| Energy Model (energy efficiency networks) | • | • | | | • | | | | • |

2.2.5.1. Energy audits

Canton de Vaud audit programme: In January 2012, the government of the Canton of Vaud approved an energy audit programme for large energy consumers (estimated to be around 600). The programme will last at least four years, from spring 2013 to December 2016, and follows a three-step methodology: pre-audit (or pre-diagnosis), preliminary audit, and in-depth audit. The rate of financial support will decrease progressively throughout the process.³⁴⁵

Voluntary target agreements: This programme started as a voluntary system with industry in 2001. At this time, enterprises cooperated voluntarily to agree on a CO₂-reduction and an energy efficiency target. In 2008, as it could be foreseen that Switzerland would not reach its commitment under the Kyoto protocol (15 % reduction of industry and combustibles related CO₂ in 2010 compared to baseline year 1990), a CO₂ regulatory tax was introduced. Enterprises with a CO₂ reduction target could benefit directly from tax exemption, as long as the targets were reached. Energy audits were conducted to determine potential savings and to agree on the targets. The Energy Agency of the Economy (EnAW: Energie Agentur der Wirtschaft) was in charge of preparing these audits in collaboration with the enterprises. The enterprises have to become members of the EnAW to be admitted to this process. The audits were carried out by state representatives in collaboration with accredited and independent experts. The goal was to find savings opportunities and to agree on a CO₂ reduction and an energy efficiency target.³⁴⁶

Reimbursement of network charge (Rückerstattung Netzzuschlag): Energy-intensive enterprises with electricity costs equivalent to at least 10% of their gross value added may, if they meet all eligibility requirements, have their network charge refunded. If electricity costs are between 5% and 10% of the gross value added, the net surcharge paid is partially refundable. Refunds must be requested at the Federal Office of Energy (BfE).

³⁴⁵ Cooremans, C. (2013): Investment in energy efficiency by large-scale consumers: an innovative audit program. Proceedings of the eceee 2013 Industrial Summer Study on Energy Efficiency, p. 569-579.

³⁴⁶ IEA (2013): Country Template – Energy Management Programs. Online: <http://www.iea.org/media/workshops/2011/iip/Switzerland.pdf>. Accessed: 19.03.2015.

The conditions for entitlement to reimbursement are that the refund amount is at least CHF 20,000 per year and that the company signs a target agreement with the federal government to increase energy efficiency. This target agreement has to be developed in cooperation with the Cleantech Agency Switzerland or the Energy Agency (EnAW), which are commissioned to administer target agreements in which cost-effective energy efficiency measures (payback period up to four years for process measures and up to eight years for infrastructure measures). Additionally, 20% of the refunded tax amount has to be invested in less cost-effective measures that are not considered in the target agreement. Finally, an audit of the target agreement is undertaken to monitor the energy savings achieved. A hardship regulation (Härtefallregelung, Article 30 EnV) also exists, under which companies with electricity costs of less than 5% of their gross value added may be refunded 30% of the network charge paid.³⁴⁷

2.2.5.2. Energy management systems

KMU Model: The KMU Model offers an energy management system for SMEs, which do not have an energy manager and have annual CO₂ emissions of less than 1,500 tonnes and annual energy costs below CHF 1,000,000. According to the Swiss Energy Agency (EnAW), the KMU Model is profitable for companies with a minimum amount of CHF 20,000 energy costs per year. Under the model, a consultant engineer from EnAW carries out “Energy check-ups” identifying cost-effective energy efficiency measures for the SMEs. Based on this energy review, the company sets itself a target and signs a voluntary agreement with the EnAW. Annual monitoring is then carried out, which documents ongoing progress and calculates energy savings achieved. Once the target is achieved, the company receives a label «CO₂ & kWh reduced». Depending on the Canton, companies receive different levels of funding for participation in this programme.³⁴⁸ Participation can also be used to get an exemption from the CO₂ tax. The participation fee is calculated according to annual energy costs (CHF 1,000 minimum fee).³⁴⁹

2.2.5.3. Exchange mechanisms

Energy Model (energy efficiency networks): In energy efficiency networks, 10 to 15 regionally based companies from different sectors come together aiming to enhance their energy efficiency performance. Within the network, they set non-binding energy efficiency goals; conduct energy audits, monitor their performance on a regular basis and regularly share their experiences with regard to energy efficiency improvements. The first successful performance of a locally-organised energy-efficiency network – called Energy Model – was observed in Switzerland in the 1990s. The subsequent spread of energy efficiency networks in Switzerland was quite fast with approximately 20 participants in the year 2000 and 2,000 participants in the year 2013.³⁵⁰ This was mainly due to the fact that the Swiss Energy Agency for Industry provided an additional stimulus. One major role of the Agency is acting as an intermediary to negotiate target agreements on CO₂ reduction between companies and the federal government. Companies, which reduce energy related CO₂ emissions by a negotiated target and accept a yearly evaluation, will be exempted from a surcharge on

³⁴⁷ Bundesamt für Energie (2014): Vollzugsweisung Rückerstattung Netzzuschlag Online: http://www.bfe.admin.ch/themen/00612/06124/index.html?lang=de&dossier_id=06168. Accessed: 20.03.2015.

³⁴⁸ For the different amounts of funding (in German, French and Italian) see: EnAW (2015): Förderbeiträge nach Region suchen. Online: <http://www.enaw.ch/de/foerderbeitraege>. Accessed: 20.03.2015.

³⁴⁹ For the participation fees see: EnAW (2015): Teilnahmebeitrag KMU-Modell. Online: <http://www.enaw.ch/images/Produkte/teilnahmebeitrag-kmu-modell-d.pdf>. Accessed: 20.03.2015.

³⁵⁰ EnAW (Energieagentur der Wirtschaft) (2013): Tätigkeitsbericht 2013. Zürich: EnAW.

fossil fuels in stationary applications of 25 CHF/tonne CO₂. In the year 2002 this concept was transferred to Germany.³⁵¹

2.2.6. United States

In the United States the energy efficiency policy mix targeted at energy audits and energy management systems in the industrial sector is mainly based on the voluntary efforts of companies, and primarily relies on non-financial incentives and technical assistance.³⁵² At state level, both the U.S. Department of Energy and the U.S. Environmental Protection Agency have set up different programmes and initiatives to support both large companies and SMEs. Beside these activities, the U.S. Department of Energy also strongly focuses on energy audits in the residential sector.³⁵³ Apart from initiatives at the state level, there are also different federally and locally organised institutions establishing industrial energy-efficiency programmes, which are not analysed in this study.

Table 68 provides an overview of instruments related to energy audits, energy management systems and exchange mechanisms currently implemented in the United States. These instruments are further detailed below.

Table 68: Overview of instruments in the United States.

| Instrument | Large enterprises | SME | Energy audits | Management system | Exchange mechanisms | Regulatory instruments | Voluntary agreements | Financial instruments | Information instruments |
|---|-------------------|-----|---------------|-------------------|---------------------|------------------------|----------------------|-----------------------|-------------------------|
| Industrial Assessment Centers (IACs) | | • | • | | | | | | • |
| Better buildings, better plants programme | • | • | | • | | | | | • |
| Energy Star for Industry Programme | • | • | | • | | | | | • |
| Superior Energy Performance | • | • | | • | | | | | • |

2.2.6.1. Energy audits

Industrial Assessment Centers (IACs): This instrument is targeted at small- and medium-sized manufacturers, which may be eligible to receive a no-cost assessment provided by DOE Industrial Assessment Centres (IACs). For this purpose teams of engineering students located at 24 universities conduct energy audits in SMEs and typically discover savings opportunities of more than \$130,000 at each company during

³⁵¹ Jochem, E., Gruber, E. (2007): Local learning networks on energy efficiency in industry – Successful initiative in Germany. *Applied energy* 84 (2007) p. 806-816.

³⁵² Doris, E.; Cochran, J.; Vorum, M. (2009): Energy Efficiency Policy in the United States: Overview of Trends at Different Levels of Government. Technical Report NREL/TP-6A2-46532 December 2009. Online: <http://www.nrel.gov/docs/fy10osti/46532.pdf>. Accessed: 26.10.2015.

³⁵³ Beside others see for example: U.S. Department of Energy (2015): Home Energy Audits. Online: <http://www.energy.gov/public-services/homes/home-weatherization/home-energy-audits>. Accessed: 26.10.2015.

the first year following the audit. To date approximately 16,000 energy audits have been conducted and the results are summarised in the IAC database³⁵⁴. In this database the following information is publicly available: a) type of facility assessed (size, industry, energy usage, products, location), b) resulting recommendations (description, energy savings, implementation costs, and payback).³⁵⁵

2.2.6.2. Energy management systems

Better buildings, better plants programme (formerly SAVE ENERGY NOW Leader³⁵⁶): This national partnership initiative invites industrial companies to take a voluntary pledge to reduce energy intensity by 25% over a ten year period. Participants are recognised as 'Better Plants Programme Partners' in cooperation with the U.S. Department of Energy. Within this programme companies focus to improve their energy management and identify energy efficiency opportunities in their operations.³⁵⁷

Energy Star for Industry Programme: This programme began in 1992 and was established by the U.S. Environmental Protection Agency and the U.S. Department of Energy. The EU has participated in the Energy Star agreement since 2001. The programme aims to support companies with implementing energy efficiency measures and practices, and promotes the use of an energy management strategy to assist industry in measuring energy performance, setting goals, and tracking energy savings. Within the programme, guidance and tools are provided and participating companies are allowed to call themselves ENERGY STAR Partners. To be authorised as an ENERGY STAR partner, companies have to [...] "commit to a) measure, track, and benchmark energy performance, b) develop and implement a plan to improve energy performance, adopting the ENERGY STAR strategy, c) educate their staff and the public about the partnership and achievements with ENERGY STAR."³⁵⁸

Superior Energy Performance: Starting in 2013, the aim of this programme, which is based on the international standard ISO 50001, is to support companies with the implementation of an energy management system. Therefore companies are required to implement ISO 50001 and are provided with a transparent system for verifying energy performance improvements and management practices. Two groups of participants can be differentiated: a) companies with limited energy management experience, that must achieve approximately 5% energy savings over a three-year-period and b) companies with longer-term energy management experience, which have to achieve at least 15% savings over ten years. Depending on the performance of the company the certification level varies between Silver, Gold, or Platinum.³⁵⁹

³⁵⁴ Institute for Industrial Productivity (2015): Industrial Assessment Center Database. Online: <https://iac.rutgers.edu/database/>. Accessed: 26.10.2015.

³⁵⁵ Office of Energy Efficiency & Renewable Energy (2015): Industrial Assessment Centers (IACs). Online: <http://energy.gov/eere/amo/industrial-assessment-centers-iacs>. Accessed: 26.10.2015.

³⁵⁶ Institute for Industrial Productivity (2015): Industrial Efficiency Policy Database. US-4a: Save Energy Now LEADER (replaced by US-4b Better Buildings, Better Plants Program). Online: <http://iepd.iipnetwork.org/policy/save-energy-now-leader-replaced-us-4b-better-buildings-better-plants-program>. Accessed: 26.10.2015.

³⁵⁷ Institute for Industrial Productivity (2015): Industrial Efficiency Policy Database. US-4b: Better Buildings, Better Plants. Online: <http://iepd.iipnetwork.org/policy/better-buildings-better-plants>. Accessed: 26.10.2015.

³⁵⁸ Institute for Industrial Productivity (2015): Industrial Efficiency Policy Database. US-6: Energy Star for Industry Program. Online: <http://iepd.iipnetwork.org/policy/energy-star-industry-program>. Accessed: 26.10.2015.

³⁵⁹ Institute for Industrial Productivity (2015): Industrial Efficiency Policy Database. US-5: Superior Energy Performance. Online: <http://iepd.iipnetwork.org/policy/superior-energy-performance>. Accessed: 26.10.2015.

2.2.7. Other countries

In addition to the examples illustrated above, several other countries outside the EU-28 have established approaches for the promotion of energy audits and energy management systems in their national energy efficiency policy. The following section highlights additional examples from Australia, India, South Africa and Turkey.

Australia is one of the countries that decided to implement a Carbon Emission Trading System in order to reduce its greenhouse gas emissions between 5% and 25% compared with 2000 levels by 2020. By 2030, Australia has committed itself to reduce its emissions between 40 and 60% compared with 2000 levels.³⁶⁰ The Australian Carbon Pricing Mechanism obliges liable entities that operate facilities with more than 25 kt of greenhouse gas emissions (GHG) per year to purchase “carbon units” which are tradable permits for each tonne of GHG emitted. Within this mechanism energy audits play a crucial role in ensuring compliance. If the regulator has reasonable grounds to suspect that a company has contravened, is contravening, or is proposing to contravene the rules, the regulator is allowed to oblige the respective company to conduct an energy audit (Article 73 (1) National Greenhouse and Energy Reporting Act).³⁶¹ In addition, the National Greenhouse and Energy Reporting (Audit) Determination 2009 made under subsection 75 (1) of the National Greenhouse and Energy Reporting Act 2007 specifies the requirements of the energy audit and the required qualifications of the energy auditor.³⁶²

The major share of industrial energy consumption in **India** is caused by energy-intensive industry. This is the reason that the Indian government decided to oblige nine energy-intensive sectors (fertilisers, iron and steel, cement, pulp and paper, chloralkali, aluminium and textiles) to conduct energy audits. The total number of obligated companies amounts to approximately 700. The legal basis for the regulation is the Energy Conservation Act (ECA) which was amended in 2010.³⁶³ The Bureau of Energy Efficiency which is a statutory body under the Ministry of Power is responsible for monitoring this regulation.

The **South African** Government established an Energy Efficiency Strategy in 2005.³⁶⁴ One key element of this strategy is the promotion of energy audits to improve energy efficiency. For this purpose, the National Energy Efficiency Leadership Network (EELN) (previously known as the Energy Efficiency Accord) has been established. This is a platform of knowledge sharing between companies, and consists of a voluntary agreement signed by those committing themselves to enhance energy efficiency. The companies pledge to develop a road map for improved energy efficiency, supported by the implementation of an energy management system, and to develop internal energy

³⁶⁰ Climate Change Authority of the Australian Government (2014): Reducing Australia’s Greenhouse Gas Emissions – Targets and Progress Review. Online: <http://climatechangeauthority.gov.au/files/files/Target-Progress-Review/Targets%20and%20Progress%20Review%20Final%20Report.pdf>. Accessed: 11.02.2016.

³⁶¹ National Greenhouse and Energy Reporting Act 2007. Online: <https://www.comlaw.gov.au/Details/C2014C00813>. Accessed: 11.02.2016.

³⁶² National Greenhouse and Energy Reporting (Audit) Determination 2009 made under subsection 75 (1) of the National Greenhouse and Energy Reporting Act 2007. Online: <https://www.comlaw.gov.au/Details/F2015C00875>. Accessed: 11.02.2016.

³⁶³ The amended Act is not publicly available. Therefore reference is here made to: Ministry of Law, Justice and Company Affairs (2001): Energy Conservation Act. Online: <http://www.powermin.nic.in/upload/pdf/ecact2001.pdf>. Accessed: 11.02.2016.

³⁶⁴ Department of Minerals and Energy (2005): Energy Efficiency Strategy of the Republic of South Africa. Online: http://www.energy.gov.za/files/esources/electricity/ee_strategy_05.pdf. Accessed: 11.02.2016.

efficiency targets. Furthermore, progress towards meeting their energy efficiency targets is publicly reported.³⁶⁵

The energy efficiency policy of **Turkey** is mainly based on the Energy Efficiency Law adapted in 2007, and its subsequent by-laws which came into force in 2008 and support energy efficiency in SMEs through training, energy audits and consultancy services.³⁶⁶ Article 7.a.1 of the Turkish Energy Efficiency Law obligates companies with energy consumption above 1,000 toe to nominate an energy manager. Furthermore, industrial plants with an energy consumption above 50 ktoe per year must set up an energy management unit. Each company must report on its energy management activities to the General Directorate of Electrical Power Resources Survey and Development Administration (EIE).³⁶⁷

³⁶⁵ Nation Business Initiative South Africa (NBI) (2014): NBI Energy Efficiency Leadership Network – Case Studies 2014. Online: <http://www.nbi.org.za/assets/downloads/NBI-Case-Studies.pdf>. Accessed: 11.02.2016.

³⁶⁶ IEA (2009): Energy Policies of IEA Countries. Turkey. Online: <https://www.iea.org/publications/freepublications/publication/turkey2009.pdf>. Accessed: 10.02.2016.

³⁶⁷ An English translation of the Turkish Energy Efficiency Law is provided by the Turkish government. However, the Turkish government points out that “the English version of this Law is intended to assist interested foreign parties. There may be discrepancies between the Turkish and English versions. In case such discrepancies occur, the Turkish version shall prevail.” (Online: http://www.eie.gov.tr/eie-web/english/announcements/EV_kanunu/EnVer_kanunu_tercume_revize2707.doc. Accessed: 11.02.2016.).

3. Implementation of Article 8 across the EU-28

Following on from the preceding review of instruments concerning energy audits, energy management systems and exchange mechanisms at a country level, this section provides an overarching view on the commonalities and differences across the EU-28 Member States with regard to the implementation of Article 8.

After a general overview of the status of the legislative process, two main sections deal with mandatory audits for large companies and with the encouragement of SMEs to implement audits and corresponding systems. In each section, a descriptive overview across the Member States is given first, followed by an outline of challenges that are relevant for both policy making and/or companies. These challenges have been identified based on information collected in the stakeholder engagement process which accompanied this study, from interviews conducted to prepare the country summaries, and by comparing the various implementation details as described above. For Member States that have not yet adopted the legislation, the analysis is based on the preliminary information available in draft documents.

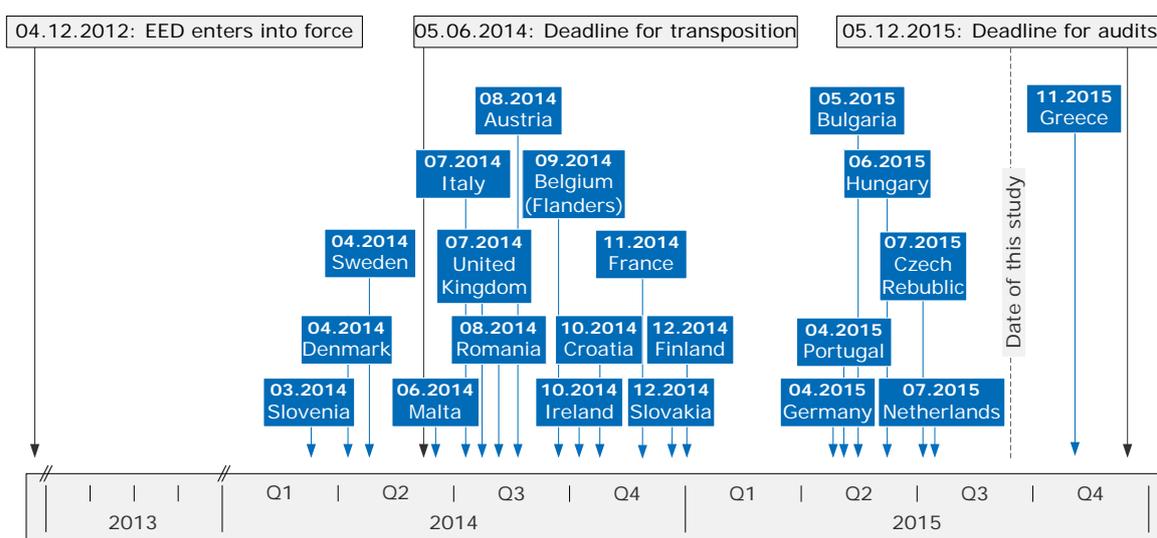


Figure 4: State of transposition of national legislation on Article 8 as of September 2015 in the EU-28.

3.1. Legislative process

The EED entered into force in December 2012. Member States were expected to fully transpose its requirements into national legislation by June 2014, i.e. within a period of roughly 18 months. As shown in Figure 4, the majority of Member States completed the transposition in 2014 and 2015. However, at the date of preparing this report, Belgium (Brussels Region, Wallonia), Cyprus, Estonia, Latvia, Lithuania, Luxembourg, Poland and Spain were still in the process of introducing the requirements of Article 8 into their primary legislation.³⁶⁸

³⁶⁸ Institutional capacity for the transposition of the entire EED generally appeared to be a challenge especially for some smaller Member States. Some of them claimed that the EED is very broad, and that this makes it challenging to transpose the Directive in a timely manner with their available resources. This evidently also depends on the specific framework conditions in the Member State.

As the general requirements of the EED had to be transposed into national legislation, the general set-up of this legislation is typically very similar across all Member States. Differences in national implementation can often only be perceived by reviewing the specific interpretations and guidance documents. The national transposition typically consists of several national documents. Usually, there is a fundamental or primary document that deals with the general set-up of the implementation of the EED, or with the requirements of Article 8 specifically. Further implementation details are provided in additional texts which can be referred to as secondary documents. They include national legal documents as well as official guidelines. The latter are primarily targeted at companies, with the aim of providing clearer guidance on how the details of the national legislation are expected to be implemented in practice. It should be noted that the level of detail provided in the primary and secondary documents on the framework conditions for mandatory audits varies considerably across Member States.

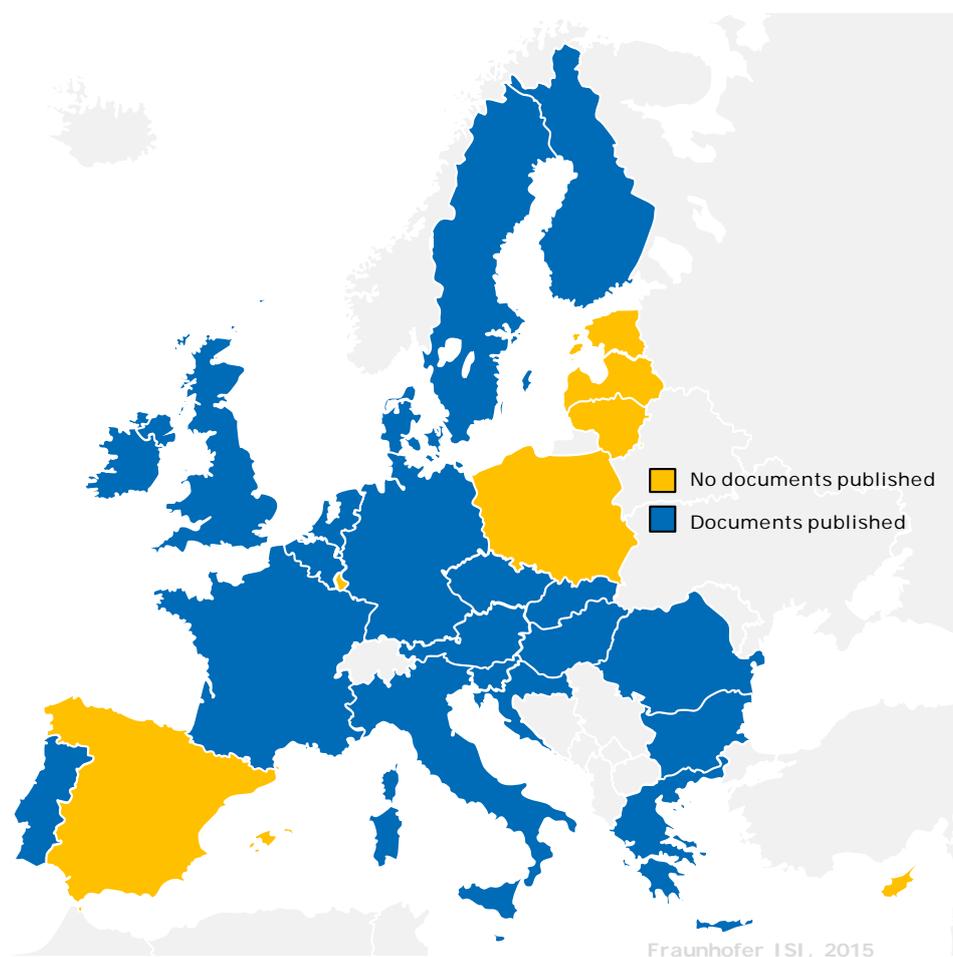


Figure 5: State of transposition of national implementation documents related to Article 8 in the EU-28 (Situation in September 2015; update for Greece in 2016; Belgium: Documents available for Flanders region).³⁶⁹

Figure 5 shows an overview of the state of implementation of national legislation based on information as of September 2015. A full overview of the specific implementation dates and documents produced by Member States is provided in Table 69.

³⁶⁹ Belgium: Wallonia primary documents still under preparation.

Table 69: National documents related to the implementation of Article 8.

| Country | Primary documents/legislation | Additional documents/legislation |
|-------------------|---|--|
| Austria | 11.08.2014: Act on Energy Efficiency | 30.01.2015: Interpretation guideline |
| Belgium: Brussels | Under preparation | - |
| Belgium: Flanders | 24.09.2014: VLAREM train 2013 04.04.2014: Energiebeleidsovereenkomsten 2015-2020 | - |
| Belgium: Wallonia | Under preparation | - |
| Bulgaria | 15.05.2015: Act on Energy Efficiency | - |
| Croatia | 17.10.2014: Energy Efficiency Act (Zakon o energetskej učinkovitosti) | - |
| Cyprus | Under preparation | - |
| Czech Republic | 01.07.2015: Energy Management Act | - |
| Denmark | 08.04.2014: Law amending the Law on the Promotion of savings in energy consumption , the Heat Supply Act , Act on Municipal cooling and various other Acts | 25.11.2014: Order on mandatory energy audits from Danish Energy Agency |
| Estonia | Under preparation | - |
| Finland | 30.12.2014: Energy Efficiency Act 1429/2014 | 15.01.2015: Regulation on energy audits (2015/20) |
| France | 24.11.2014 Decree of 24 November 2014 on detailed rules of application of the energy audit provided for in Chapter III of Title III of Book II of the energy code | - |
| Germany | 23.04.2015: Act on Energy Services and Energy Efficiency Measures (EDL-G) | 08.07.2015: Interpretation guideline (BAFA Merkblatt) |
| Greece | 09.11.2015: Law 4342/2015 (143 A) | - |
| Hungary | 07.06.2015: Act LVII of 2015 on Energy Efficiency | 07.06.2015: Government Decrees 122/2015 (V. 26.), NFM Decrees 25/2015 (V. 26.), 26/2015 (V. 26.) |
| Ireland | 03.10.2014 Statutory Instrument 426/2014 | 29.07.2015: FAQ document (4 th rev.) |
| Italy | 04.07.2014: Decree No. 102 on energy audits | 19.05.2015: Article 8 Guideline for Decree 102 |
| Latvia | Under preparation | - |
| Lithuania | Under preparation | - |
| Luxembourg | Under preparation | - |
| Malta | 06.06.2014: Legal Notice 196/2014 Energy Efficiency and Cogeneration Regulations 2014 | 31.01.2015: Guidance Note for Legal Notice 196/2014 |
| Netherlands | 10.07.2015: Regulation of the Minister of Infrastructure and Environment (IENM/BSK-2015/103340) | - |
| Poland | Under preparation | - |
| Portugal | 30.04.2015: Decree Law n.º 68-A/2015 | - |
| Romania | 01.08.2014: Energy efficiency Law 121/2014 | 17.12.2014: Decizia nr. 2794/17.12.2014 on certification of energy managers |
| Slovakia | 01.12.2014: Act 321/2014 on Energy audits | 06.07.2015: Act 179/2015 on Energy audits |
| Slovenia | 04.03.2014 Energy Act | - |
| Spain | Under preparation | - |
| Sweden | 30.04.2014: Law on energy audits in large companies (SFS 2014:266) | 15.05.2014: Regulation on energy audits in large companies (SFS 2014:347) 24.11.2014: Provision on energy audits in large companies (STEMFS 2014:2) 16.02.2015: FAQ document |
| United Kingdom | 17.07.2014: Energy Savings Opportunity Scheme (ESOS) Regulations | 15.07.2015: Guideline from Environment Agency |

3.2. Analysis of implementation for large enterprises

The following overview on the implementation of mandatory audits for large companies, aggregates the results from all of the EU-28 Member States. It follows the same structure used for the discussion of the individual Member States in Section 2.

3.2.1. Definition of large companies

The definition of a large company is very illustrative in showing differences in the interpretation and implementation of Article 8. The EED does not provide an explicit definition of a large company, but it provides a definition of an SME (see also section 1.4). Large enterprises subject to the mandatory energy audits are defined as those that are non-SMEs. In Table 70 the three main criteria for determining whether a company is an SME or a large company are shown. Based on these criteria, a total of eight different cases may occur. In a total of three cases, companies can be defined as an SME, and in a total of five cases companies are considered to be large enterprises. The employee criterion shown on the left of Table 70 is the primary criterion. If a company has 250 or more employees, then it is considered as a large company according to the EU definition (cases 5, 6, 7 and 8). If a company has less than 250 employees, but more than EUR 50m turnover and more than a EUR 43m balance sheet, it is also considered as a large enterprise (case 4).

Table 70: Eight cases for the definition of a large enterprise.

| Case | Employees | Turnover | Balance Sheet Total | Outcome | Reason |
|------|-----------|----------|---------------------|---------|---------------------------------------|
| 1 | < 250 | ≤ €50m | ≤ €43m | SME | Meets all criteria |
| 2 | < 250 | ≤ €50m | > €43m | SME | Meets main and one secondary criteria |
| 3 | < 250 | > €50m | ≤ €43m | SME | Meets main and one secondary criteria |
| 4 | < 250 | > €50m | > €43m | Large | Only meets primary criteria |
| 5 | ≥ 250 | ≤ €50m | ≤ €43m | Large | Does not meet primary criteria |
| 6 | ≥ 250 | ≤ €50m | > €43m | Large | Does not meet primary criteria |
| 7 | ≥ 250 | > €50m | ≤ €43m | Large | Does not meet primary criteria |
| 8 | ≥ 250 | > €50m | > €43m | Large | Does not meet any criteria |

While some Member States directly rely on the EU definition of an SME and have adopted the non-SME definition for a large enterprise, others have developed their own explicit definitions. In such definitions, Belgium (Flanders), France, Slovakia and Spain modified the employee threshold to above 250 employees. With regard to financial criteria, Denmark and the United Kingdom included the exact threshold values; Croatia and Slovenia modified the financial thresholds well below the EU threshold value. And finally, there is a group of countries which connect the criteria in a different way as compared to EU definition. This group includes Belgium (Flanders), Croatia, Denmark, France, Spain and Sweden. An overview of the resulting impact on the target group based on the three criteria alone is shown in Table 72 and Table 73.

As indicated in Table 71, some Member States have also opted to rely on additional criteria to enlarge the target group. For example, Bulgaria, Ireland, Italy and Romania include additional companies that are above a certain threshold for energy demand (for a detailed description see section 3.2.3). This is in line with Article 1(2) of the EED, which states that the Directive sets out minimum requirements, and Member States can go beyond these if they wish.

Table 71: Definition of large enterprises.

| Country | Em- ploy- ees | Link em- ployees to finan- cial crite- ria | Annual turnover | Link between financial criteria | Annual balance sheet total | Addi- tional require- ment |
|-----------------------------|---------------------|--|--------------------|--|----------------------------------|-------------------------------------|
| Austria | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Belgium (Brussels) | - | - | - | - | - | - |
| Belgium (Flanders) | >250 | OR | > EUR 50m | OR | > EUR 43m | - |
| Belgium (Wallonia) | - | - | - | - | - | - |
| Bulgaria | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | Yes ⁸ |
| Croatia | ≥ 250 | OR ⁶ | ≥ EUR 34m | OR ⁶ | ≥ EUR 17m | Yes ⁹ |
| Cyprus ⁴ | - | - | - | - | - | - |
| Czech Republic ⁷ | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | Yes ⁸ |
| Denmark | ≥ 250 | AND | ≥ EUR 50m | AND | ≥ EUR 43m | - |
| Estonia | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Finland | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| France | > 250 | OR | > EUR 50m | OR | > EUR 43m | - |
| Germany | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Greece | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Hungary | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Ireland | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | Yes ⁸ |
| Italy | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | Yes ⁸ |
| Latvia ³ | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Lithuania ⁴ | - | - | - | - | - | - |
| Luxembourg ⁴ | - | - | - | - | - | - |
| Malta | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Netherlands ³ | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Poland* | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Portugal | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | Yes ⁸ |
| Romania | ≥ 250 | OR | > EUR 50m | AND | > EUR 43m | Yes ⁸ |
| Slovakia | > 250 | OR | > EUR 50m | AND | > EUR 43m | - |
| Slovenia | ≥ 250 | OR | ≥ EUR 35m | AND | ≥ EUR 17.5m | Yes ⁹ |
| Spain ³ | > 250 | AND | > EUR 50m | AND | > EUR 43m | - |
| Sweden | ≥ 250 | AND | > EUR 50m | AND | > EUR 43m | - |
| United Kingdom | ≥ 250 | OR | > EUR 50m | AND | ≥ EUR 43m ² | - |

¹ The "OR" in the EU definition is considered as a non-exclusive OR, i.e. it may also be read as AND/OR.

² Note that the large enterprise regulation in the UK scheme reads "[...] an annual turnover in excess of 50 million euro and an annual balance sheet total of 43 million euro [...]" (=exactly EUR 43 Mio.) whereas the SME definition reads "[...] has an annual balance sheet total not exceeding 43 million euro [...]". Here it is assumed that this implies that large companies are those with a value equal or above this threshold.

³ The transposition into national legislation is still ongoing; the values provided for Latvia, the Netherlands and Spain are based on draft legislation.

⁴ The transposition into national legislation is still ongoing with no specific information on the thresholds.

⁵ No information on the transposition of the SME delimitation could be identified.

⁶ In the Croatian transposition, at least two criteria have to be fulfilled.

⁷ In the Czech national legislation, no explicit definition of an SME could be identified. Therefore, it is assumed that the EU SME definition applies.

⁸ Potential inclusion by energy threshold.

⁹ Lower financial ceiling thresholds which also cover companies that are SMEs.

Based on these differences, the delimitation of the target groups addressed in the different countries varies as illustrated in Table 72 and Table 73.³⁷⁰ The upper left quadrant of Table 72 shows the definition according to the EED. At the current time, 16 Member States use exactly the same threshold values and interactions as given by the Directive. The remaining Member States show differences as compared to this base case. Red segments show exclusions as compared to the Directive, green segments are additional inclusions based on the three criteria.

According to the current definitions used by Denmark and Sweden, some companies with more than 250 employees are excluded from the group of large companies. In Slovenia, additional companies are included due to the lower threshold values. For France and Croatia, for example, there are additional inclusions as well as exclusions. Note that the differences only focus on the three main criteria. Additional criteria may apply in some countries but are not part of the illustration. Furthermore, the illustration is a conceptual overview; in practice it may be the case that differences in definition do not lead to changes in the size of the target group. For instance, the Slovak exclusion of the 250 employee threshold is only relevant if there actually are companies with exactly that number of employees.

The illustrations show that differences between Member States are often based on specific details of the national transposition. It should be noted that the illustration only shows some of the differences between the Member States. There may be others, e.g. in the counting of employees (head count, full-time equivalents), with regard to multi-site and multi-nationals (see also below), or with regard to the duration for which the thresholds are valid.

In terms of estimated absolute numbers of large companies, there are considerable differences across the Member States as illustrated in Figure 6. For the smaller Member States, the estimated numbers are lower as compared to the larger Member States. This is also caused by the different industrial structure across countries. In Malta, for example, there are 80 targeted companies, whereas in Germany, the size of the target group is estimated to be 50,000 companies. As a consequence, the administrative follow-up process with regard to implementation and monitoring can be expected to be quite different across the Member States. With regard to the estimated number of companies affected, it should be noted that these numbers have been collected from different sources including NEEAPs, and best-guesses by interviewees. It should also be noted that some of these figures were estimated only based on the employee threshold, while others try to capture the number of companies that actually fall under the requirements of Article 8 by all three criteria (and potential additional criteria where applicable). Furthermore, some of these estimated figures might include companies that have already implemented an audit or energy or environmental management system. Thus, the numbers should be compared with caution.

A rough analysis of the estimated numbers can be provided by comparing the above mentioned data with information on company statistics from Eurostat. Eurostat regularly publishes the number of companies by size (based on employee thresholds) in the different Member States.³⁷¹ An illustration of the corresponding results is shown in Figure 7. This illustration is based on the numbers shown in Figure 6 and information from the Eurostat database. For the illustration shown in Figure 7, the number of

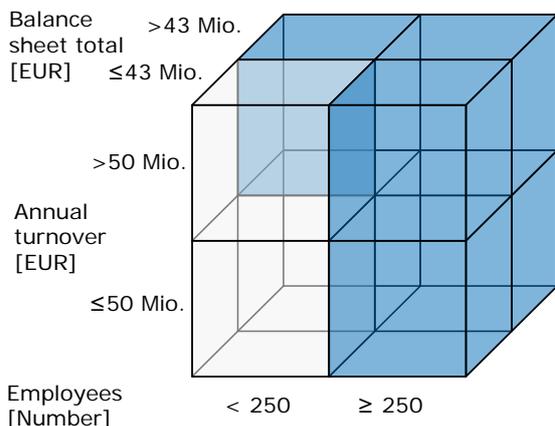
³⁷⁰ For an explanation on the base type of this illustration, please compare section 1.4.

³⁷¹ Eurostat (ed.) (2015): Annual enterprise statistics by size class for special aggregates of activities (NACE Rev. 2) [sbs_sc_sca_r2]. Online: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=sbs_sc_sca_r2&lang=en. Accessed: 27.10.2015.

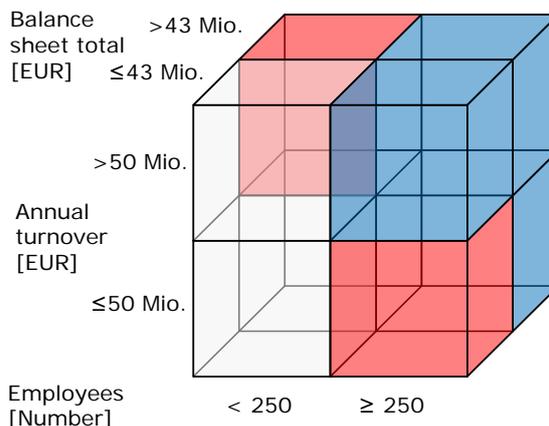
companies with 250 employees or more has been compared to the above given estimates on companies.

Table 72: Comparison of large company definition in the Member States based on the three main criteria.

Delimitation according to EU definition



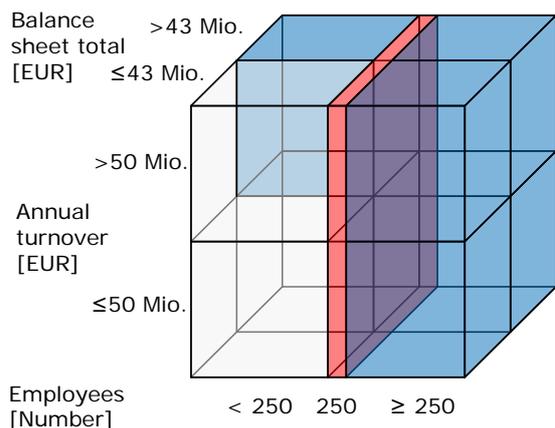
Employees plus financial criteria



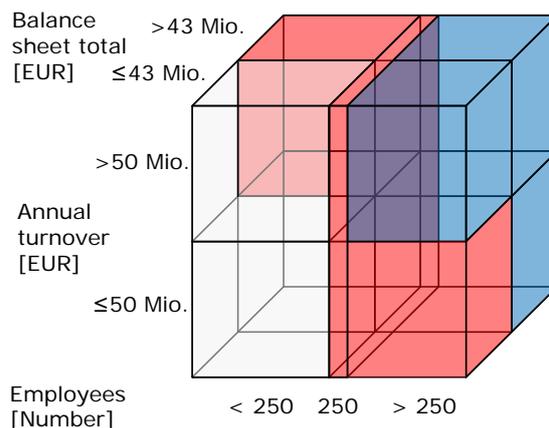
Applies to: Austria; Bulgaria; Czech Republic; Estonia**; Finland; Germany; Greece; Hungary; Ireland; Italy; Latvia**; Malta; Netherlands; Poland**; Portugal; Romania; United Kingdom

Applies to: Denmark*; Sweden

Exact employee threshold not included



More employees plus financial criteria



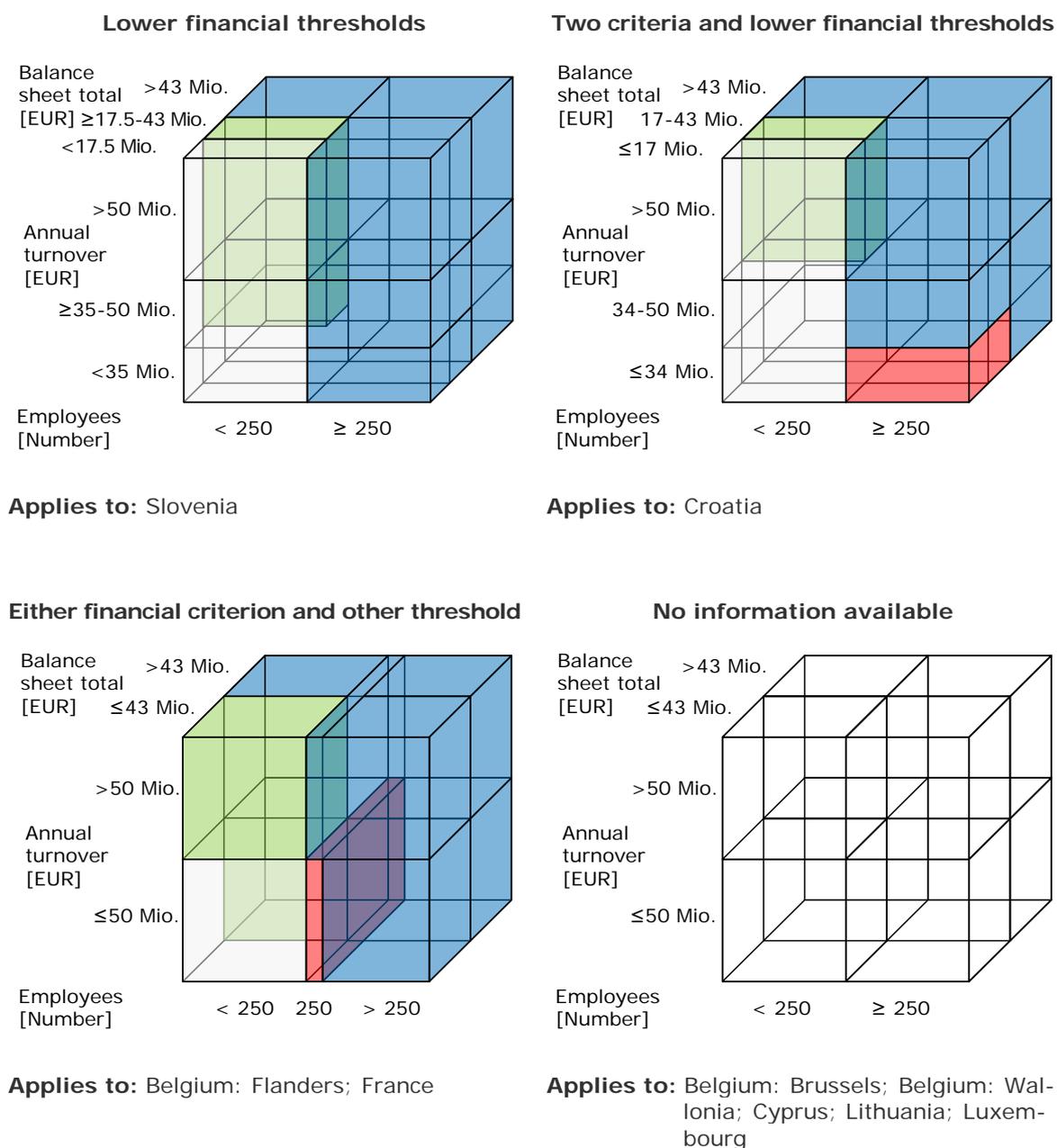
Applies to: Slovakia

Applies to: Spain**

Red parts: Omissions as compared to EU definition; green parts: Additional inclusions.

* Interpretation of Denmark includes exact financial thresholds.

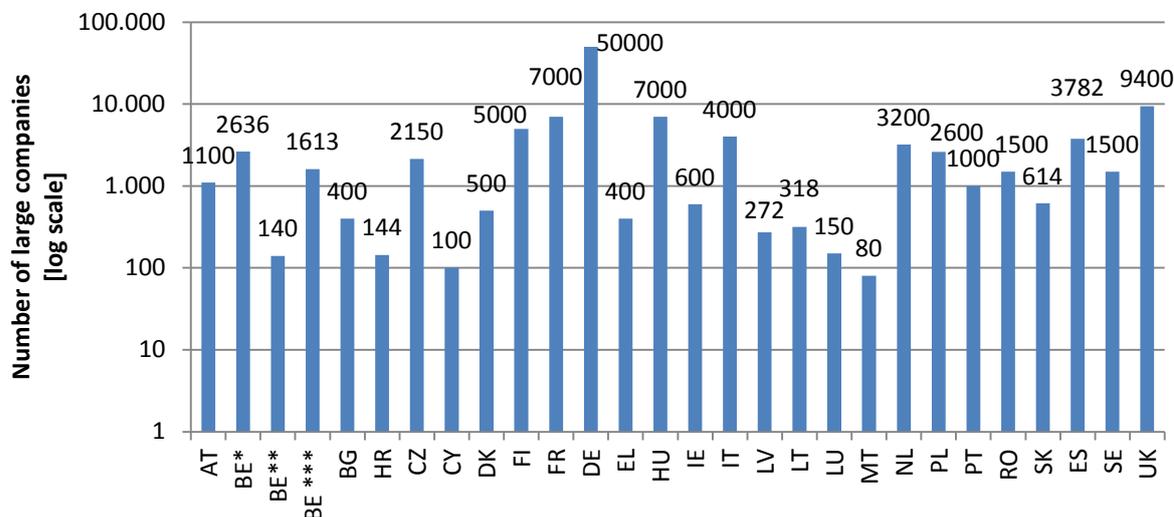
** According to current draft definition.

Table 73: Comparison of large company definition in the Member States based on the three main criteria.

As not all the information is available for all countries in the Eurostat database, the most recent figures available for the years 2011 to 2013 have been chosen (exception: Italy that has not published numbers in these years). It should be noted that the statistics from Eurostat do not include companies from all sectors: financial and insurance activities are not included in the figures. Thus, the number of companies above 249 employees per country tends to be underestimated in the database. One should also take into consideration that the information from the Eurostat database only focuses on employee numbers, but does not include the financial (or other) criteria required by Article 8 of the EED for the actual determination of the size of the target

group. Thus, the following interpretation of the illustration is based on various simplifying assumptions.

Figure 6: Estimated number of companies covered by Article 8 in the EU-28.



Note: Numbers are estimations based on National Energy Efficiency Action Plans and result from the stakeholder engagement process. Where ranges were provided, the upper ceilings are illustrated. Figure for BE* refers to *Belgium: Flanders*, for BE** refers to *Belgium: Wallonia* and for BE*** refers to *Belgium: Brussels Region*. For Estonia and Slovenia no exact number could be identified within this study.

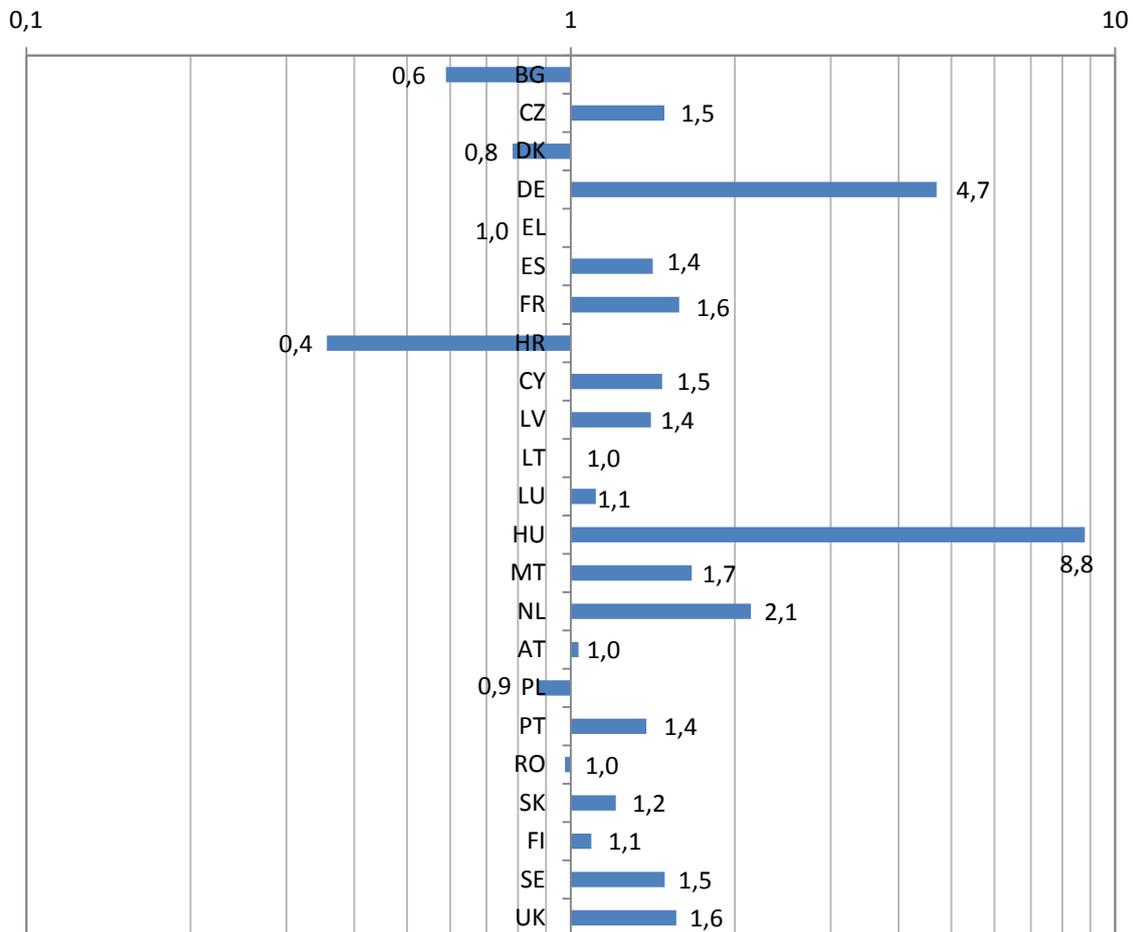
If the estimated size of the target group resulting from the data collection process in this study matches exactly with the number from the Eurostat database (which is defined by companies with 250 employees or more), then a value of 1 is shown in the graph and no bar is visible (e.g. in the case of Lithuania). If the estimated number of companies is larger than the Eurostat statistics, then the ratio is above one, i.e. the bar goes to the right of the graph. If the number is lower, then the bar goes to the left. For example, the size of the target group covered by Article 8 in Hungary has been roughly indicated as being nearly nine times higher than the values from the Eurostat statistics. For Croatia, on the contrary, the number is only 40% of the companies as compared to Eurostat. Thus, the illustration shows how the estimated numbers of companies by country sometimes differs compared to the data provided by Eurostat. As the number of employees is a decisive criterion (i.e. all companies with 250 or more employees would have to conduct an audit) which is furthermore linked to the two financial thresholds, one could expect that all bars in the graph should lie in the right-hand region. However, some countries with a value close to 1 only expect little more companies than indicated by the data from the Eurostat database, while others with a high ratio expect that many more than just the number of companies as per definition in the Eurostat database (employee criterion only) will be covered by the regulation. However, as pointed out above, this interpretation has to be handled with care and is subject to the limitations mentioned.

With regard to the delimitation of the target group, the following challenges can be summarised:

- **Implicit definition of large companies:** There are various differences in the delimitation of the target group based on the three main criteria. The inversion of the SME definition that is required to define large companies leads to some differences between the classifications of companies by individual Member States. Correctly linking the different criteria appears to be especially challenging. This challenge applies to both companies that need to find out whether they are subject to

a mandatory audit, and institutions that need to set up their processes in line with the EED.

Figure 7: Ratio of the estimated number as compared to company statistics.



Note: The number of companies affected by mandatory audits is based on data from NEEAPs and best-guesses by interview partners. The company statistics are based on figures from Eurostat³⁷¹ that are based on the employee-criterion only.

- Lack of data to identify large companies:** The delimitation of the target group is based on three criteria. Some Member States have pointed out that the use of the employee criterion is relatively simple, but information on the financial criteria is often not sufficiently available. Furthermore, in the case of linked and/or multi-national companies, the two-level nature of combining both national and international data for the identification of the target group has been found to be very challenging for national authorities, as there is no readily available database of information across the Member States. It is therefore difficult for authorities to find out whether a company that is considered as an SME is part of a multi-national company and therefore subject to the requirement of the mandatory audit (see also section on multi-site/multi-national companies).
- Missing details of national implementation:** It was found, particularly during the stakeholder engagement process, that the legal uncertainty with regard to the provision of primary legislation and derived documents is considered as a source of uncertainty by companies. In principle, the general framework conditions resulting from Article 8 are stated in the Directive. As a Directive, the EED provides some

liberty to Member States in terms of the national implementation. As not all the details of the national implementation were published at the time of preparing this report, some national companies were still uncertain about when and how they would be expected to comply. For multi-national companies, a major challenge lies in the different national interpretations of the Directive. Some companies that intend to implement an internationally harmonised process across their operating countries remain uncertain whether this approach will actually meet the requirements of Article 8 in all countries. Furthermore, for some countries, such as France and Romania, amendments to the current legislation are expected, leading to additional uncertainty.

- **Implementation deadline for energy audits:** Many Member States had only published primary legislation and derived documents while this study was under preparation. According to the Directive, the deadline for the first set of mandatory energy audits to be completed for large companies is 5 December 2015. Companies located in Member States that published the implementation details quite recently therefore faced relatively short deadlines within which to comply. In some countries, it has been reported that companies found it challenging to identify an auditor as a result of a high short-term demand for energy audits. In some cases this was also claimed to lead to an increase in prices, and in a reduction in the quality of the audits. On the other hand, some companies reported that they focus on compliance by conducting a formal audit only (“distress audit”). This means that due to short deadlines, they mainly focus on achieving compliance with the national requirements on a formal level by conducting a minimal audit. In these instances, real effort to exploit the results, or to set up a full audit approach and implement recommendations, was reported to be postponed to a later occasion when more time will be available to undertake a proper audit preparation process.

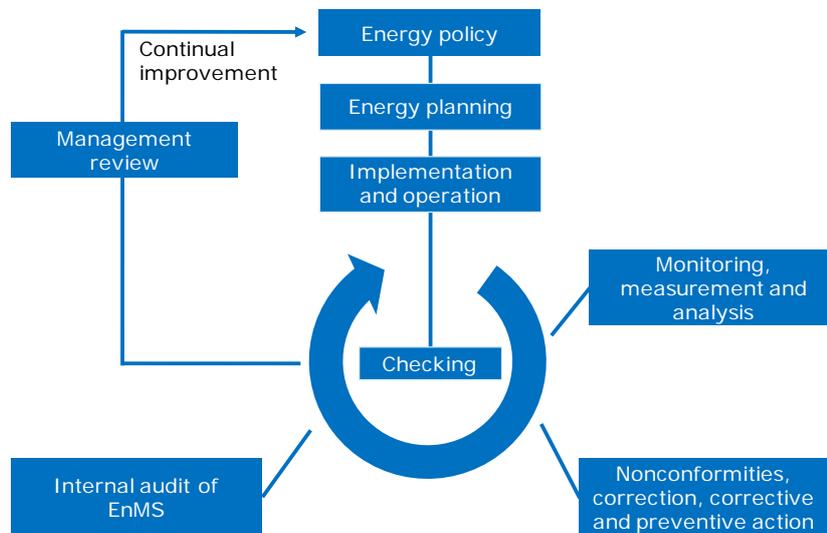
3.2.2. Deadlines for audits as part of energy management systems

As an alternative route for compliance with Article 8, Member States may allow companies to conduct an energy audit within the implementation of an energy management system. Energy management systems are usually superior to energy audits in terms of impact, as they are based on a systematic and strategic process. This helps companies to regularly review and improve their energy usage in the long-run. The utilisation of a continual PDCA cycle (Plan – Do – Check – Act) enables companies to continuously improve their energy efficiency and to thereby generate energy savings.^{372,373} Furthermore, energy management systems help ensure a secure energy supply, minimise the risks of rising energy prices, allow optimisation of energy purchasing, save energy costs and provide more transparency about energy flows and energy use in the company in the long-run.³⁷⁴

³⁷² Waide, P.; de Keulenaer, H. (2015): The potential for energy savings from energy management in the EU – findings from a comprehensive assessment. In: Proceedings from the eceee Summer Study, p. 333-338.

³⁷³ Schulze, M.; Nehler, H.; Ottosson, M.; Thollander, P. (2015): Energy management in industry – a systematic review of previous findings and an integrative conceptual framework. *Journal of Cleaner Production* 112 (5), p. 3692–3708.

³⁷⁴ Hirzel, S.; Sontag, B.; Rohde, C. (2011): Betriebliches Energiemanagement in der industriellen Produktion. Kurzstudie. Fraunhofer Institute für System- und Innovationsforschung ISI, Karlsruhe.

Figure 8: Energy system model according to ISO 50001:2011.

In June 2011 the International Organization for Standardization (ISO) launched the ISO 50001 Standard which further enhances the diffusion of energy management systems in industry.³⁷⁵ The corresponding energy management system model is depicted in Figure 8. The adoption of this energy management approach by companies varies considerably across the 28 EU Member States. In 2014, the ISO registered a total of 5,267 valid certificates across the EU-28. The majority of these (3,204 certificates) have been registered in Germany, followed by the UK with 376 certificates, Spain with 310 certificates, Italy with 294 certificates and France with 279 certificates. According to an ISO survey, a total of 15 Member States accounted for less than 50 certificates.³⁷⁶

To further strengthen the implementation of energy management systems across the 28 EU Member States, Article 8(6) of the EED allows Member States to exempt large companies from the mandatory audit if they implement an energy or environmental management system as an alternative system, and this system is certified by an independent body according to the relevant European or International Standards. To be exempted, companies have to ensure that the management system includes an energy audit on the basis of the minimum criteria given in Annex VI of the Directive. This is the reason why several Member States have provided the option of implementing an energy or environmental system as an alternative way to comply with the obligations in their national legislation.

The details, such as the deadline or the type of alternative system, vary across countries. As the implementation of an energy or environmental management system has a broader scope and consists of a continuous energy review process, it therefore takes more time to implement as compared to an energy audit. For this reason some Member States have extended the deadline for compliance when introducing an energy or environmental management system. In Denmark, Germany, Greece, Ireland, Malta and Sweden, the deadline for the energy audit as part of an alternative system has been adjusted. In Denmark, the deadline is at the beginning of March 2016 and in

³⁷⁵ International Organization for Standardization(ISO) (2011): ISO 50001:2011 - Energy management systems - Requirements with guidance for use. Online: http://www.iso.org/iso/catalogue_detail?csnumber=51297. Accessed: 24.02.2016.

³⁷⁶ International Standardization Organization (ISO) (2015): ISO Survey 2014. Online: <http://www.iso.org/iso/iso-survey>. Accessed: 24.02.2016.

Germany at the end of 2016; in Sweden, the deadline is the first quarter of 2017 if a declaration on the intention of a management system was provided by 5 December 2015. In Ireland, the deadline is at the end of June 2016 if the system is developed under an agreement with SEAI, and Malta provides a different deadline upon individual request. Preliminary information for Greece indicates that large enterprises will be given a one year extension to comply with Article 8 requirements from the date at which Greece's legislation comes into force. This will be 9 November 2016. Other countries, such as France, do not grant an extension of the deadline for the energy audit as part of an alternative system, and Austria chose the deadline for the energy audit to be 30 November 2015. However, the majority of Member States did not provide information about an extension of the deadline for an energy audit as part of an alternative system, which is also due to the fact that secondary legislation and/or additional guidance documents were still pending during the preparation of this study.

Generally the implementation of an energy or environmental management system instead of a stand-alone energy audit is desirable as these systems include a continuous and broader approach to increase the energy efficiency in a company. For this purpose a variety of instruments have been launched by Member States, which are described in detail in section 4.3.2. However, the alternative systems and the respective deadlines cause several challenges for the companies that can be summarised as follows:

- **Timeframe for introducing management systems:** As indicated above, the introduction of an environmental or energy management system requires the establishment of an adequate organisational structure in a company. Due to this broader scope and the need to realise an organisational change, the introduction of management systems requires a considerably longer time than undertaking an energy audit. Therefore, a sufficient timeframe is crucial so that companies can fully implementing such alternative systems.
- **Varying requirements for management systems:** As indicated above the deadlines for the implementation of alternative systems differ across Member States. For internationally operating companies, which often establish a common process across all sites in the EU, these differences may cause a source of uncertainty. Companies may therefore not immediately implement an alternative system and may undertake an energy audit first to meet the immediate deadline imposed by their country's legislation. Similarly, multi-national companies that intend to introduce a common alternative system for all company parts located in the EU face a situation where such a system has to respond to the strictest requirements set out by the relevant Member States. However, there is currently no available overview of the national requirements for alternative systems across the Member States.
- **Motives for the implementation of alternative systems:** In the current setting of the EED, an energy audit is always required, independent of whether a company conducts a stand-alone mandatory audit or whether this audit is part of an alternative system. As the implementation of the alternative system requires additional resources, both in terms of financial and human resources, there is a special need for information that underlines the advantages of the implementation of such systems beyond compliance with the Directive. On the one hand, the provision of such information could help national institutions to increase interest in the implementation of alternative systems. On the other hand, such information could help employees to convince management about the benefits of energy management.

3.2.3. Exemptions and additional inclusions

When defining the scope of Article 8, some Member States opted to exempt companies, or include additional companies, thus expanding or restricting the scope of the obligation. A summary of these aspects is provided in Table 74. Criteria for exemptions are based on energy-related, economic or statutory aspects, amongst others.

In Denmark companies with an annual energy consumption below 100,000 kWh pa are exempted from undertaking mandatory audits. Similar approaches can be found for Malta (below 50,000 kWh pa) and Romania, where companies with an annual energy consumption below 11,630 MWh are exempted from the regulation to conduct an energy audit. Portugal, on the contrary, refers to the financial viability of the energy audit and states in its national legislation that in cases where undertaking an energy audit every four years is not financially viable, they only have to be carried out every eight years. If a company takes part in certain voluntary programmes in the Netherlands, it is not required to comply with the audit regulations (see section 2.1.21.3).

In addition to energy-related criteria, some Member States (e.g. Austria, Italy, UK, Germany and Sweden) have also decided to exempt public institutions. Member States justify this decision by referring to the EU definition, where the obligation refers to 'enterprises'. According to the terminology of the European Court of Justice an enterprise is "*any entity engaged in an economic activity, irrespective of its legal form*". This is the reason why Member States allow an exemption for institutions with predominantly statutory activities, which are not economically operating. Austria, for example, states that facilities subject to the public right (e.g. local authorities, institutions under public law, funds or foundations under public law) are not covered by its regulation. In Italy the obligation does not apply to public administration offices, and in UK regulations do not apply to publicly funded bodies. Germany decided to exempt all municipalities and institutions with predominantly statutory activities. There are also areas of economic activity remaining that are also excluded from the scope of the regulation due to their sovereign character. Examples of sovereign non-economic activities and other activities excluded from the obligation to conduct an energy audit, include the fields of security, police and judiciary; public water supply, sewerage or waste disposal (as far as these activities are not performed by private third parties); activities of government-funded educational institutions (especially schools and kindergartens), etc. With regard to municipalities in Sweden, there has been discussion as to whether these organisations should be treated as a company group or not. Municipalities often include both public administration, schools and health care institutions, but also economic activities such as energy production or letting apartments. It has been decided that only the economic parts of the municipality are to be considered when determining if they are large companies or not.

Alongside these exemptions, there are also additional inclusions. In this regard, the Article 8 Guidance Note by the European Commission states: "Member States may add additional elements when developing criteria based on Annex VI. They may also indicate in which circumstances a particular part of the six elements or criteria would be most relevant (e.g. life-cycle cost analysis). Member States through their national minimum criteria may tailor the needs for different segments where they promote energy audits, for instance to SMEs (for whom a detailed audit may not be cost-effective), a public service (e.g. a city public transport service) or households."³⁷⁷

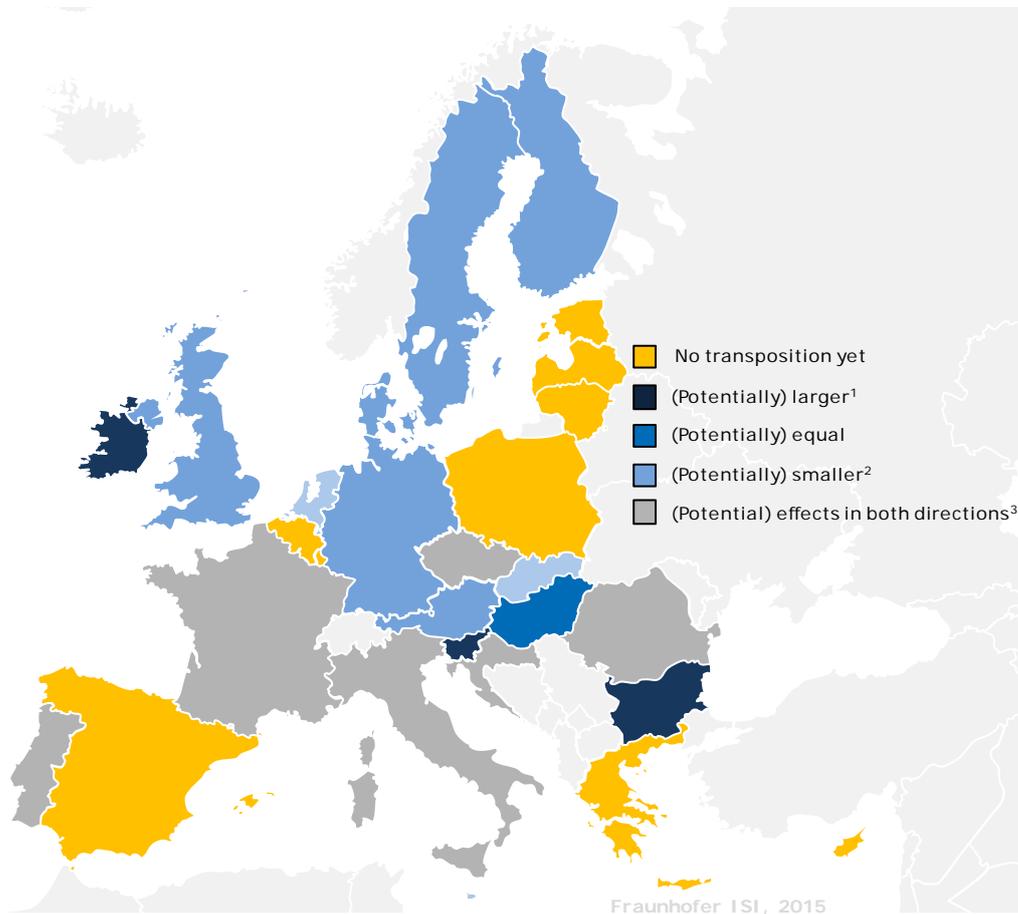
³⁷⁷ European Commission (2013): Guidance note on Directive 2012/27/EU on energy efficiency, amending Directives 2009/125/EC and 2010/30/EC, and repealing Directives 2004/8/EC and 2006/32/EC. Article

The additional inclusion of companies, and therefore an extension of the target group, was observed in Bulgaria, Croatia, Ireland, Italy, Romania and Slovenia. Croatia and Slovenia decided to extend their target groups by adjusting and reducing the financial thresholds for the definition of an SME (see also 3.2.1). Some other countries extended the target group with other criteria, namely energy-related thresholds. In Bulgaria, companies with an annual energy consumption above 3,000 MWh, and in Romania with an annual energy consumption of 11,630 MWh, are also covered by the regulations regardless of whether the company would otherwise be categorised as SME. Italy has extended the target group that has to conduct an energy audit to include energy-intensive companies that are registered in the annual list set up CCSE (Cassa Conguaglio per il Settore Elettrico, English: Equalization Fund for the Electricity Sector) in the ministerial Decree of 5 April 2013. In Ireland, Public Service Organisations that either meet the definition of a large enterprise, or have either an individual building of more than 500m² floor area or an annual energy spend of more than EUR 35,000, have to comply with the obligation to conduct an energy audit.

Figure 9 provides an overview of the potential effects of the exemptions and additional inclusions in combination with the three main criteria for delimiting SMEs and large companies. The situation is compared to the “default” requirements as set out in the EED. Note that the impact can only be considered as a potential change of the target group as there are not necessarily companies that fall into the different classes, e.g. companies that have exactly 250 employees. Based on the combined information, several cases can occur. The target group for mandatory audits can (potentially) be enlarged as compared to the default requirements, e.g. by including additional SMEs via an energy threshold, it can (potentially) be diminished, e.g. by excluding certain public companies. There may also be cases that remain undefined, e.g. because both effects overlap.

8: Energy audits and energy management systems. Online: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013SC0447&from=EN>. Accessed: 21.09.2015.

Figure 9: Correspondence of national legislation and the default requirements of the EED in the EU-28 with regard to the size of the target group for mandatory audits.



¹: (Potentially) larger target group due to inclusions such as companies exceeding certain additional energy or financial thresholds.

²: (Potentially) smaller target group due to exclusions of public institutions or different usage/link of threshold value (see Table 71, Table 72, Table 73).

³: (Potential) effects in both directions due to two of the above mentioned effects.
(Belgium: Not yet transposed in all regions.)

The heterogeneity of the framework conditions relating to additional inclusions and exemptions across Member States causes the following challenges:

- **Complexity of definition in case of additional criteria:** As previously noted, linking the three main criteria for determining the status of a company has already proven to be challenging in some Member States. The use of additional criteria for excluding and including companies further increases the complexity of determining the status of a company. As a result, both Member States and companies have to consider the three main criteria for the EU definition, plus information on the ownership structure, in the case of linked companies, as well as additional criteria for inclusion or exemption. Without clear guidance, this task can become challenging for both the institutions and the companies.

Table 74: Exemption and additional inclusions for compulsory energy audits.

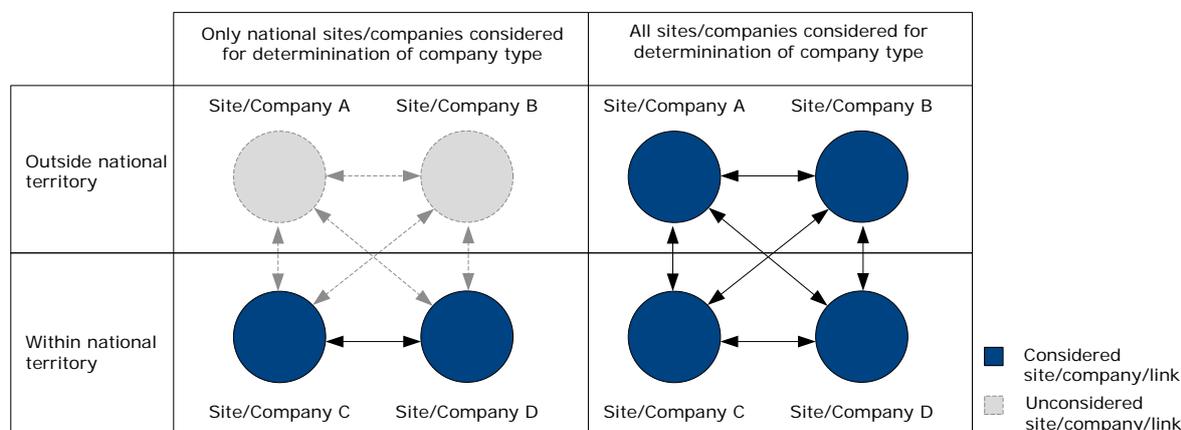
| Country | Exemptions | Additional inclusions |
|-----------------------|--|--|
| Austria | Some facilities subject to public right | - |
| Belgium (all regions) | - | - |
| Bulgaria | - | Companies with energy consumption above 3,000 MWh/year |
| Croatia | - (secondary legislation under preparation) | Lower minimum thresholds for inclusion (turnover: EUR 34m; balance sheet total: EUR 17m) |
| Cyprus | - | - |
| Czech Republic | - | Possibly additional inclusion due to energy threshold |
| Denmark | Companies with an energy consumption below 100,000 kWh/year | - |
| Estonia | Legislation under preparation | Legislation under preparation |
| Finland | Large companies participating in a voluntary energy efficiency agreement that includes energy audits and was signed with a government agency (e.g. the national tool ETJ+) | - |
| France | - | - |
| Germany | Municipalities and institutions with predominantly statutory activities | - |
| Greece | - | - |
| Hungary | - | - |
| Ireland | - | Public Service Organisations that either meet the definition of a large enterprise, or have either an individual building of more than 500m ² floor area or an annual energy spend of more than EUR 35k |
| Italy | Public administration offices | Certain energy-intensive industries |
| Latvia | - | - |
| Lithuania | Legislation under preparation | Legislation under preparation |
| Luxembourg | Legislation under preparation | Legislation under preparation |
| Malta | Companies with an energy consumption below 50,000 kWh/year | - |
| Netherlands | If organisation is part of the LTA3 or MEE voluntary programmes then it is not required to comply with the Regulation | - |
| Poland | Legislation under preparation | Legislation under preparation |
| Portugal | In case the periodic energy audits are not profitable they have to be carried out only every eight years | Companies with an energy consumption over 500 toe/year are therefore required to carry out energy audits under SGCIÉ every eight years. |
| Romania | Companies with an energy consumption of less than 1,000 toe | Companies which consume more than 1,000 toe per year, irrespective of the companies' size |
| Slovakia | - | - |
| Slovenia | - | Lower minimum thresholds for inclusion (turnover EUR 35m; balance sheet EUR 17.5m) |
| Spain | Legislation under preparation | Legislation under preparation |
| Sweden | - | - |
| United Kingdom | Publicly funded bodies. | - |

3.2.4. Multi-national and multi-site companies

Several characteristics of multi-site and multi-national companies are relevant when assessing their status as SMEs or large enterprises (see section 1.4.1). The ownership structure has direct implications for both the calculation of the thresholds, and the decision as to whether a company, or part thereof, is obliged to conduct an energy audit at site level.

With regard to the calculation of the threshold values, foreign parts of a company are considered in different ways by Member States. This can be illustrated using the example of a multi-national company consisting of four parts or sites denoted by A, B, C and D. Parts A and B are located outside the national territory; parts C and D are located inside the national territory. As visualised in Figure 10, either all parts of the company can be considered for the calculation of the threshold values or only the parts located within the national territory (C and D). Denmark, Finland, Germany and the United Kingdom decided to calculate the thresholds based on all parts of the group (A to D in the example), i.e. all parts located inside and outside the national territory form the basis of the calculation of the thresholds. On the other hand, Greece and Italy have decided to only take parts C and D into consideration for the calculation of the threshold values and so sites/related companies located outside the national territory are not considered. For many countries, no information could be obtained on how the parts outside the national territory will be considered. These include Austria, Belgium, Cyprus, Czech Republic, Estonia, France, Hungary, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

Figure 10: Different approaches to treating foreign sites/companies.



In addition to the determination of the threshold values, a second decision must be taken, related to which company parts have to actually conduct the mandatory audit. Austria, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Malta, Netherlands and Sweden have limited the scope for conducting a mandatory audit to those company parts located in the national territory. UK enterprises that would be classed as SMEs in isolation, but are part of a large corporate group outside the UK do not need to conduct a mandatory audit in the UK. Again, little information on the actual situation in various countries (Belgium, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Latvia, Lithuania, Luxembourg, Poland, Portugal, Romania, Slovakia, Slovenia and Spain) was available within the timeline of this study. Further details on national implementation are provided in Table 75.

Table 75: Requirements for conducting an energy audit for multi-national companies.

| Country | Specific requirements for multi-national operating companies based on national transpositions |
|----------------|--|
| Austria | Scope of the Austrian obligation to conduct an energy audit is limited to the parts of the company operating in Austria. |
| Belgium | No detailed information available. |
| Bulgaria | Decision due to be set out in a Special Ordinance under the Energy Efficiency Act. |
| Croatia | No information available yet, secondary legislation still under preparation. |
| Cyprus | No information available yet (Energy Ministry currently taking legal advice). |
| Czech Republic | No information available. |
| Denmark | Criteria for large companies are calculated for the entire group (global level). |
| Estonia | No information available. |
| Finland | Calculation of thresholds applied to enterprises registered in Finland and subsidiaries of overseas enterprises operating in Finland; Regulations do not apply to any operations outside of Finland. |
| France | The French legislation considers only operations that are based in France. If the parent company is based outside national territory then the regulations only cover operations registered in France with a SIREN code. |
| Germany | Calculation of the thresholds based on all sites of the company group, including subsidiary companies abroad. Only sites located in Germany are obliged to conduct an energy audit |
| Greece | Base: operations within Greece of enterprises that meet the large enterprise definition. |
| Hungary | Companies registered in Hungary have to conduct an energy audit |
| Ireland | The definition of a large enterprise applies to each legal entity registered in Ireland. It is not applied at the group level but for each registered legal entity independently. If a large company is operating in Ireland but is not registered in-country they are not required to comply. |
| Italy | For the calculation of the thresholds for the definition of a large company figures at group level, including the sites abroad, are relevant |
| Latvia | No information available yet, primary and secondary legislation still under preparation |
| Lithuania | No information available yet, primary and secondary legislation still under preparation |
| Luxembourg | No information available yet, primary and secondary legislation still under preparation |
| Malta | Energy audits are mandatory for non-SMEs registered and/or doing business in Malta; this also refers to subsidiaries of large companies in Malta and Maltese subsidiaries of large foreign companies |
| Netherlands | Only operations based in the Netherlands are considered. |
| Poland | Still under preparation |
| Portugal | Still under preparation |
| Romania | No information available |
| Slovakia | No information available yet, primary and secondary legislation still under preparation |
| Slovenia | No information available yet, secondary legislation still under preparation |
| Spain | No information available yet, primary and secondary legislation still under preparation |
| Sweden | Case-by-case analysis will be carried out. |
| United Kingdom | Calculation of the thresholds based on all group activities of an enterprise based in the UK or based overseas; any company that has a UK registered entity that meets the thresholds must comply. |

The aforementioned considerations lead to several challenges:

- **Identification of relevant parts of a group:** Companies that belong to a group may be required to conduct a mandatory energy audit in some Member States if they are part of a group that exceeds the threshold values. As a consequence, companies that would be considered as an SME if counted as stand-alone are required to conduct an energy audit. Thus, the Member States have to identify SMEs falling under the requirement by both the threshold value and the company structure. During interviews for this study, this point has been highlighted by institutions in Member States as being very complicated.
- **Inclusion of mini-sites as part of groups:** Mini-sites with few employees, low turnover and/or very low energy demand (e.g. a national office), may be included in the requirement to conduct a mandatory audit if they are counted as part of a large enterprise. Using a sampling approach for audits of very similar facilities may alleviate the burden for these sites if there are multiple similar sites (see next section). There is a danger of overburdening a company with a relatively high effort for an energy audit at a site with low returns, and/or comparatively high penalties.
- **Lack of English language guidance documents:** The national implementation process for Article 8, including the definition of operational details, was still ongoing in many Member States at the time of preparing this report. Especially in the case of multi-national companies, it has been highlighted that there is a lack of English language guidance documents and legislation in several countries. In multi-national companies, there is often a centralised body that coordinates the entire audit implementation process. As documents are often provided only in the national tongues, this makes it especially challenging for multi-national companies to fully understand the requirements across the various Member States in which they operate.

3.2.5. Minimum coverage of the energy audits

Annex VI of the EED states that an energy audit shall “[...] (d) be proportionate, and sufficiently representative to permit the drawing of a reliable picture of overall energy performance and the reliable identification of the most significant opportunities for improvement.” Furthermore, the Guidance Note describes the framework conditions for the transposition of this aspect defining that “[...] the degree of thoroughness needed for drawing up the required reliable assessment are to be defined on a case by case basis.”³⁷⁸ Taking into consideration the need for representativeness, some Member States have defined different minimum percentages of the total energy consumption of the company that have to be covered by the energy audits. However, the majority of Member States have not yet decided on this issue. While some countries, such as Bulgaria and Malta, request the inclusion of the total energy consumption of the specific company in the energy audit, other countries define explicit percentage rates which have to be covered by the audit and therefore allow a certain exclusion of the energy consumption from the scope of the energy audit, such as Finland (95%), France (65 or 80%), Germany (90%) and the United Kingdom (90%). Some other Member States directly follow the general wording in Annex VI of the EED and define in their national legislation that the energy audit has to cover all essential areas of energy consumption and at the same time has to be sufficiently proportionate and

³⁷⁸ European Commission (2013): Guidance note on Directive 2012/27/EU on energy efficiency, amending Directives 2009/125/EC and 2010/30/EC, and repealing Directives 2004/8/EC and 2006/32/EC. Article 8: Energy audits and energy management systems. Online: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013SC0447&from=EN>. Accessed: 21.09.2015.

representative. This therefore leaves room for interpretation by both energy auditors, enterprises and enforcement authorities. This is the case in Austria, Italy and Malta. In Austria the energy audit must include all essential areas of the energy consumption and at the same time the audit has to be proportionate and representative, as well as considering the three major energy consumption areas (buildings, processes and transportation) as far as these cover a minimum share of 10% of the total energy consumption of the entire company.

For companies that have a number of similar sites some Member States, such as Finland, France, Germany, Italy and Sweden allow a 'sampling approach' for energy audits. This means that if a company has different sites that are sufficiently similar regarding their energy consumption profiles, it is sufficient to conduct an energy audit at one of these sites, which thus serves as a representative example. In case a company has for example several identical supermarkets, it could carry out an energy audit in one supermarket, for example, and then apply the results as representative to the others. In consequence not every site has to conduct an energy audit. The requirement may thus be fulfilled if energy audits are carried out for a representative number of sites if the remaining sites are similar in characteristics such as their energy consumption profile, their number of employees, etc. The sample size is for example calculated by determining the number of sites which is equal to the square root of the total number of sites in the cluster, rounded to the nearest upper whole number.

The heterogeneity of framework conditions relating to the minimum coverage of the energy audit (Table 76), as well as the sampling approach across MS, requires companies to prepare for a specific situation in every country. This may impede the utilisation of a harmonised approach across all national sites for multi-national companies.

3.2.6. Penalties for non-compliance

Due to the fact that Article 8 of the EED requires Member States to impose obligations on third parties (namely the large companies), Article 13 of the EED and the Guidance Note from the European Commission state that Member States are required to lay down rules on penalties applicable in the case of non-compliance with the national provisions adopted. The penalties have to be 'effective, proportionate and dissuasive' and must be notified to the Commission within 18 months of the Directive coming into force.³⁷⁹

Figure 11 gives an overview of the upper ceiling of non-compliance penalties imposed on enterprises that have been put in place across Member States. Penalties directly on the enterprise vary considerably, ranging from EUR 10,000 in Austria to EUR 200,000 in Romania. Some Member States have in addition, or as an alternative, imposed penalties on company directors: Ireland (EUR 5,000), Croatia (EUR 2,000) and Slovenia (EUR 10,000). Hungary has additionally decided to impose a penalty of EUR 320 on energy auditors for non-compliant behaviour. Denmark, Finland, France, Netherlands and Sweden have not defined any penalty, and intend to decide this on a case-by-case basis. Spain has set out a penalty of EUR 60,000 in its draft legislation and has linked this value with a second criterion that the amount may not exceed 10% of the turnover of the company. Estonia, Latvia, Lithuania, Luxemburg and Poland have not yet

³⁷⁹ European Commission (2013): Guidance note on Directive 2012/27/EU on energy efficiency, amending Directives 2009/125/EC and 2010/30/EC, and repealing Directives 2004/8/EC and 2006/32/EC. Article 8: Energy audits and energy management systems. Online: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013SC0447&from=EN>. Accessed: 21.09.2015.

defined any penalties, because their primary and/or secondary legislation was still under preparation at the time of writing.

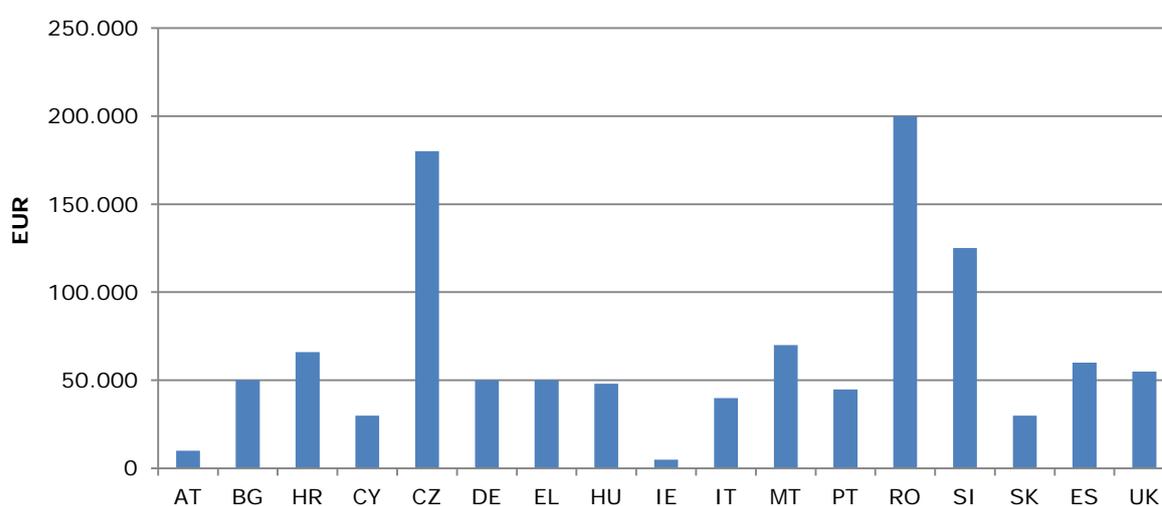
Table 76: Minimum coverage of energy consumption by mandatory audit (only shows countries where information was available).

| Country | Minimum coverage |
|----------------|--|
| Austria | Major energy consumption areas (buildings, processes and transportation) as far as these cover a minimum share of 10% of the total energy consumption of the entire company have to be considered. |
| Belgium | No information available. |
| Bulgaria | 100% of the energy consumption to be covered by the audit, no exclusion allowed. |
| Croatia | No information available yet, secondary legislation still under preparation. |
| Cyprus | No information available. |
| Czech Republic | No information available. |
| Denmark | Up to 10% of the total energy consumption in the company in Denmark can be exempted. The following adjustments are also allowed: <ul style="list-style-type: none"> • Elements of the companies comprised by the BAT-conclusions, that are related to energy efficiency may be excluded • Energy audits of buildings with a valid label based on a building review, under the rules on energy labelling of buildings, can be based on the data of the energy label • Vessels with less than 5,000 gross register tonnes, and construction sites, are exempted from the regulation in Denmark. |
| Estonia | No information available. |
| Finland | Minimum share of 95% of the energy consumption of a company. Sampling approach allowed: Where a company has up to 15 sites or buildings – 1 site audit must be completed; 16-100 sites or buildings – 10% of sites must be audited; 101-400 sites or buildings – square root of the target sites; over 400 sites or buildings - 5% total sites. |
| France | Sampling approach allowed for sites that are similar; sample size should be the square root (rounded to the nearest whole number) of the total number of sites of a given type. Audits undertaken during, or prior to, 2015 that meet the legislative requirements must cover 65% of total energy consumption. Thereafter, 80% of total energy consumption must be included within the audit. |
| Germany | Minimum share of 90% of the energy consumption of a company, if a company group as a huge number of different sites, the exclusion of several sites in case these are similar in their energy consumption characteristics to other sites covered by the audit is possible |
| Greece | No information available |
| Hungary | No information available |
| Ireland | Energy use that is covered by a Greenhouse Gas Emissions Permit (under the EU Emissions Trading Scheme) is exempt from the regulations |
| Italy | Energy audit has to be proportionate and sufficiently representative. If a company group has a large number of different sites, the exclusion of several sites is possible if they are similar in characteristics to other sites that are audited. |

| Country | Minimum coverage |
|----------------|--|
| Latvia | No information available yet, primary and secondary legislation still under preparation |
| Lithuania | No information available yet, primary and secondary legislation still under preparation |
| Luxembourg | No information available yet, primary and secondary legislation still under preparation |
| Malta | Secondary legislation in Malta does not indicate that a certain percentage could be excluded from the audit; audit has to be sufficiently representative |
| Netherlands | No information available |
| Poland | Still under discussion |
| Portugal | No information available |
| Romania | No information available |
| Slovakia | No information available |
| Slovenia | No information available yet, secondary legislation still under preparation |
| Spain | No information available yet, primary and secondary legislation still under preparation |
| Sweden | Representative sample |
| United Kingdom | Minimum share of 90% of the energy consumption of a company |

Generally the imposition of a financial penalty for non-compliance is an appropriate sanction in order to ensure compliance with the obligation. However, the following challenges have been identified:

Figure 11: Upper limit of non-compliance penalties for companies (values include fines for repeated non-compliance).



Note: All values shown are rounded and converted from national currency to Euros. Thus, slight differences may arise.

- **Appropriateness of penalties:** To be effective, a penalty for non-compliance needs to exceed the costs of actually conducting an energy audit. Thus the penalty has to be sufficiently high to induce action. In addition, it is of course conceivable to design penalties which are not based on money, e.g. by disallowing energy auditors from conducting energy audits. However, the relatively wide range of

penalties (Table 77) suggests that there is still a need for determining an appropriate level more consistently across Member States in order to be 'effective, proportionate and dissuasive'. Defining the penalties appropriately is also necessary as it is very important not to financially overburden companies, especially those that would count as SMEs but are captured by energy audit legislation as part of a company group.

Table 77: Simplified overview of maximum penalties for non-compliance.

| Country | Maximum penalties for non-compliance |
|--------------------|--|
| Austria | Company: Up to EUR 10,000 |
| Belgium | Still pending |
| Bulgaria | Company: Up to EUR 50,000 |
| Croatia | Company: Up to EUR 66,000 Management: Up to EUR 2,000 |
| Cyprus | Up to EUR 30,000 |
| Czech Republic | Up to EUR 180,000 |
| Denmark | Not specified (case-by-case decision) |
| Estonia | Legislation under preparation |
| Finland | Case-by-case basis |
| France | Case-by-case basis, but shall not exceed 2% of the company's revenues (or 4% of revenues in case of repeated non-compliance) |
| Germany | Company: Up to EUR 50,000 |
| Greece | Company: Up to EUR 100,000 |
| Hungary | Company: Up to EUR 48,000 Auditor: Up to EUR 320 |
| Ireland | Management: EUR 5,000 (from 2016 on) |
| Italy | Companies: Up to EUR 40,000 |
| Latvia | Legislation under preparation |
| Lithuania | No information available yet, primary and secondary legislation still under preparation |
| Luxembourg | Legislation under preparation |
| Malta | Company: Up to roughly EUR 70,000 or up to EUR 1,400 per day of non-compliance |
| Netherlands | Local authority level will decide on a case-by-case basis |
| Poland | Legislation under preparation |
| Portugal | Up to EUR 44,000 |
| Romania | Up to EUR 200,000 |
| Slovakia | Company: Up to EUR 30,000 |
| Slovenia | Company: Up to EUR 125,000 Management: Up to EUR 10,000 |
| Spain ¹ | Company: Up to EUR 60,000 (but not more than 10% of annual turnover) |
| Sweden | Not specified (case-by-case decision) |
| United Kingdom | Company: Up to EUR 55,000 |

¹ Information based on draft for primary legislation.

3.2.7. Specific provisions for buildings and transport

Annex VI of the EED defines minimum criteria for energy audits and also refers to buildings and transport. More specifically, Annex VI (b) states that an energy audit shall “[...] comprise a detailed review of the energy consumption profile of buildings or groups of buildings, industrial operations or installations, including transportation.” This leaves room for interpretation by Member States with regard to the consideration of buildings and transportation activities in an energy audit. Most Member States do not detail how to deal with these two aspects in their national transposition documents. However, information from a few countries shows the different approaches taken by some Member States and the resulting challenges.

Regarding transportation, accounting for cross-border transportation activities (road, rail, shipping, and flights) in the energy audit remains open in Annex VI (b) and thus leaves room for interpretation by Member States. Currently, the majority of Member States have not specified how to handle cross-border transportation activities in their national transposition documents. However, countries such as Germany, Italy, Spain, Sweden and the United Kingdom provide detailed information on how to deal with transportation. Germany, for example, states in its national transposition documents that transportation activities (road, rail, shipping, and flights) have to be generally considered in the energy audit. Thereof, only the energy consumption resulting from transportation activities directly connected to the purpose of business should be considered. Cross-border transportation has to be incorporated as well, if it begins or ends in Germany. The United Kingdom has taken a similar approach and decided to incorporate cross-border transportation by aircraft or shipping vessel if it begins or ends in the UK. In Sweden the energy audit only has to cover the transport activities of a company if it operates the transportation on its own. However, it has not yet been decided how cross-border transportation activities (e.g. shipping abroad) will be accounted for in the representative consumption of a company under the Swedish scheme. The Spanish Government allows the exclusion of transportation activities from the energy audit in its draft national legislation. This is subject to the condition that the company implements a management system for transportation including a fleet management system, and training courses on efficient fleet management or efficient driving.

With regard to buildings, an energy audit has to sufficiently consider buildings to gain a representative overview of the energy consumption profile of the company (Annex VI b, EED). However, in this context it is important to consider that buildings in which the company operates can be either owned by the company itself or rented. This raises the question of who is responsible for the energy audit in the case of a rented building; either the landlord who is able to directly influence the energy consumption of the building or the tenant. The majority of MS have not published specific information on how to deal with buildings when conducting an energy audit. However, at the time of preparing this study Austria, Denmark, Finland, Germany, Hungary, Spain, Sweden and the United Kingdom had provisions on buildings, which are described in the following section.

In Austria the responsibility for conducting an energy audit depends on who operationally uses the building (usually the user and/or tenant). In Finland the person or organisation paying for the energy is always considered to be responsible for the energy audit. The situation is similar in Germany, where the energy consumption must be taken into account in the energy audit of the company that is operationally using the building. However, if a building is rented, and the respective company does not have an influence on its energy consumption, it is allowed to exclude the building from the energy audit. This is also allowed in Sweden, where the actual responsibility for

the audit lies with the company that has the control of the energy consumption. That means if a building is rented to a company as a tenant, the heating system, for example, does not need to be audited by the tenant. In this case, the responsibility for auditing the heating system lies with the landlord, as long as the landlord is a company that is subject to the mandatory audits. In Hungary, the obligation of the tenant as a large enterprise depends on its used share of the whole building in terms of floor-area and energy consumption. If the tenant uses only small part (under 50%) of the building and consumes less than 50% of the total energy consumption of the building, it is not obligated to carry out an energy audit. If the tenant uses more than 50% of the building, or consumes the majority of the total energy consumption of the building, the tenant is obligated to carry out an audit for the whole building and to specify the impacts of the activity proportionally. The Danish government allows the energy audit to be based on data from a building review that will already be available if the company holds a valid energy label. Thus, the collection of new data is not necessary. The Spanish draft legislation goes beyond this and allows companies to exclude buildings from the energy audit if they hold an energy efficiency certificate obtained in accordance with Royal Decree 235/2013, which is a certification for the energy performance of buildings.

As shown above, the national requirements for the audit coverage of buildings and transport are diverse and often not yet detailed in national implementation. Therefore, the following main challenges for transportation and buildings arise:

- **Consideration of cross-border transportation in energy audits:** In principle, the same cross-border transportation activities can be subject to two audits if these activities are subject to mandatory energy audits in two Member States at the same time. As a consequence, resources might be committed to the same task. On the other hand, if cross-border transportation is excluded in two Member States, it might not be considered at all.
- **Coverage of buildings in energy audits:** The different requirements across Member States cause uncertainties for multi-national operating companies as well as energy auditors who are conducting audits in different countries. There is still a need for Member States to clarify which parts of a building should be covered by whom in the audit process. It should also be noted that there are requirements in the Energy Performance of Buildings Directive (EPBD) on issuing energy performance certificates (EPCs) for buildings. Although EPCs are based on a determination of the energy performance of the building, they should not be seen as equivalent to an energy audit, nor as an alternative for an energy audit.

3.2.8. Monitoring and implementation of recommendations

Article 8 requires Member States to actively promote the availability and use of energy audits and the implementation of their recommendations. However, it must be noted that there is no obligation on a company to follow the recommendation contained in the energy audit. With regard to promoting the implementation of energy audit recommendations the monitoring process will play a crucial role. The collection of data will allow Member States to gain more information regarding the energy characteristics of companies as well as typical recommendations resulting from energy audits. Such detailed information could be used to underpin programmes promoting the implementation of recommendations resulting from the energy audits. Annex VI of the EED also states that "the data used in energy audits shall be storable for historical analysis and tracking performance". Most countries are still in the process of defining how to organise the monitoring and deciding which data will be collected. For Cyprus, the Czech Republic, Estonia and Slovenia there was no information available at the

time of preparing this study, as they had not yet decided how to organise the monitoring of compliance. However, the following should be noted:

- **Varying timeframes:** The timeframe between the completion of the energy audit and the submission of compliance documents varies across Member States, e.g. in Poland the company should notify the president of the Energy Regulatory Office (ERO) regarding the conducted energy audit within 30 days of the completion of the audit. In Austria the information has to be sent either by the auditor or by the company itself no later than 14 February of the following year. In Denmark every large company has to provide a report with the results from the energy audit to the Danish Energy Agency no later than 1 March 2016. Other Member States set the deadline in relation to a request sent to companies. For example, in Finland a large enterprise must submit its audit report within one month of a request made by the Finnish Energy Authority.
- **Requested documents:** The requested documents from the respective monitoring authority (e.g. energy audit report) and the level of detail of the collected information varies considerably across Member States. In the majority of MS, (namely Austria, Denmark, Finland, France, Hungary, Ireland, Italy, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, Spain, Sweden and the United Kingdom), large companies are obliged to ensure compliance with Article 8 of the EED *proactively* by submitting information concerning their energy audit. In this regard some Member States only request proof of the completion of an energy audit, whereas others require a detailed report on the energy audit. Some Member States such as Germany, Greece and Netherlands have decided not to oblige large companies to submit compliance information. In these countries large companies have to submit information only *upon request* by the monitoring authority.
- **Responsible person for submission of documents:** In the majority of Member States the company itself is responsible for the submission of the relevant documents to ensure compliance with the obligations resulting from Article 8 of the EED. However, in some Member States, such as Hungary and Lithuania, the energy auditor is responsible for the submission of relevant documents from the energy audit to the respective supervisory authority. In Lithuania, energy auditors are obliged to report the audits they have conducted and present a summary of the energy audit reports to the Energy Agency every six months. In Hungary, both the company and the energy auditor are responsible for submitting documentation; the auditor has to submit information online regarding the audit to the Hungarian Energy Authority (HEA) and large enterprises are obliged to report their energy consumption directly to HEA (see section 2.1.15).
- **Database:** To summarise the information collected during the energy audits, some Member States (namely Austria, Croatia, Italy, Malta and Poland) have decided to establish a database to collate information from energy audit reports. This includes data regarding the characteristics of companies, the identified measures, and potential savings resulting from the energy audits and alternative systems. Some Member States, such as Croatia, Italy and Malta, are currently at the planning stage regarding such databases.
- **Spot checks:** Some Member States such as Germany, Spain, Sweden and the United Kingdom have decided to carry out only spot checks in order to monitor compliance with Article 8. This monitoring is based on the initiative of the supervisory authority in the respective country. Companies are not required to submit information proactively on compliance with Article 8, but rather have to provide the relevant documents on request. Most of the countries will undertake spot checks

on a random selection of a statistically significant proportion of energy audits performed in each period (four years).

With regard to the monitoring and implementation of recommendations, the following challenges have been identified:

- **Ongoing definition of the monitoring process:** As some Member States have yet to decide on how to conduct their monitoring process, companies are still lacking information on the specific requirements to which they will need to adhere. This concerns, for example, issues related to which documents have to be submitted, which person is responsible for the submission of the documents and when the documents have to be submitted.
- **Administrative reporting process:** Depending on the degree of detail regarding the submission of documents and the level of information required in the monitoring process, a substantial set of documents can be required. This could be seen as administratively burdensome by companies.

3.3. Analysis of implementation for SMEs

According to the requirements of Article 8, Member States shall encourage SMEs to participate in energy audits and to implement recommendations from these audits. As compared to large organisations, there are various characteristics of SMEs that need to be taken into consideration when setting up activities to encourage them in implementing energy audits, energy management systems and/or participating in exchange mechanisms. These characteristics translate into particular challenges related to SMEs:

- **Relevance of energy demand:** In general, the energy demand of an SME is lower than the demand of a large company with similar products. Even though the energy costs might be important for the overall expenditure of the SME, the absolute level of energy costs is generally lower than in the larger company. Due to this comparatively low value, the energy saving potentials both in terms of energy and money saved tend to be less important for SMEs. In turn, the attractiveness of decreasing energy demand is lower. Furthermore, economies of scale for dealing with energy efficiency are smaller as compared to large companies. For instance, a large company might need a certain level of effort to acquire knowledge on how to improve ten of its furnaces while the SME will need much the same effort to improve its single furnace.
- **Limited organisational capacity:** SMEs often do not have personnel that are focussed on energy efficiency, whereas large organisations tend to employ skilled and dedicated personnel for this task. Driving energy efficiency therefore often depends on individuals with high ambition in the field. Information-related barriers are generally more prevalent in smaller organisations, because SMEs tend to have less experience with energy related matters than large companies. Thus, it becomes more difficult for them to obtain and process information on energy efficient technologies and saving measures, or to launch related activities.³⁸⁰

³⁸⁰ E.g. Schleich, J. et al. (2015): Effect of energy audits on the adoption of energy-efficiency measures by small companies. In: Proceedings of the eceee Summer Study, pp. 1827-1836; Thollander, P. et al. (2007): Energy policies for increased industrial energy efficiency: Evaluation of a local energy programme for manufacturing SMEs. In: Energy Policy 35 (2007), pp. 5754-5713.

- **Restricted financial capacity:** SMEs often have stronger restrictions on the availability of budget for energy-related activities, or may have other investment priorities.³⁸¹ Thus, assuring the finance for undertaking an energy audit and implementing its recommendations becomes more challenging than for large companies.
- **Organisational decision-making:** Generally, planning processes tend to be based on less rigorous strategic approaches in smaller organisations.³⁸² Due to the centralised decision-making processes, the responsibility for decision-making is often limited to a few persons or an individual, e.g. the owner of the company. Thus, improvements in energy efficiency can actually be more quickly implemented than in larger organisations, where split-incentives and more sophisticated organisational structures may slow down implementation processes. The particular challenge in SMEs is thus to convince individual decision-makers of the benefits of improving energy efficiency with credible information. It has also been observed that SMEs tend to accept longer payback times for investments than large companies. That means that economic myopia is not necessarily as strong in privately owned SMEs as in larger organisations that are mainly benchmarked by external shareholders.

Such challenges have to be overcome by adequate policy instruments. The following section provides an overview of instruments that are currently in place for addressing SME energy efficiency challenges. It first provides an aggregated overview of the instruments in place across the EU-28. This is followed by a further disaggregated review of instruments by type and focus area.

3.3.1. Overview of instruments across the EU-28

The analysis of instruments at country level, provided in section 2, illustrates that the different Member States rely on various types and numbers of instruments to address energy management in SMEs. A total of 49 different instruments related to SMEs across the EU-28 has been identified. Figure 12 provides a general overview on the state of implementation of instruments currently in place in Member States, as well as those that will be put into operation soon. The illustration generally follows the definition of instruments provided in section 1.4 'Instruments established' means that there are instruments in place. Countries labelled as 'instruments established and in preparation' have instruments in place as well as instruments under preparation. For Member States labelled as 'no instruments', no specific instruments could be identified. Note that the overview in Figure 12 is independent of the type and the numbers of instruments. Both the types and also the number can vary considerably across the different countries. For instance, in Germany, there are six instruments in place and in Denmark four; countries such as Finland, Ireland and Spain had one instrument in place at the time of preparation of this study.

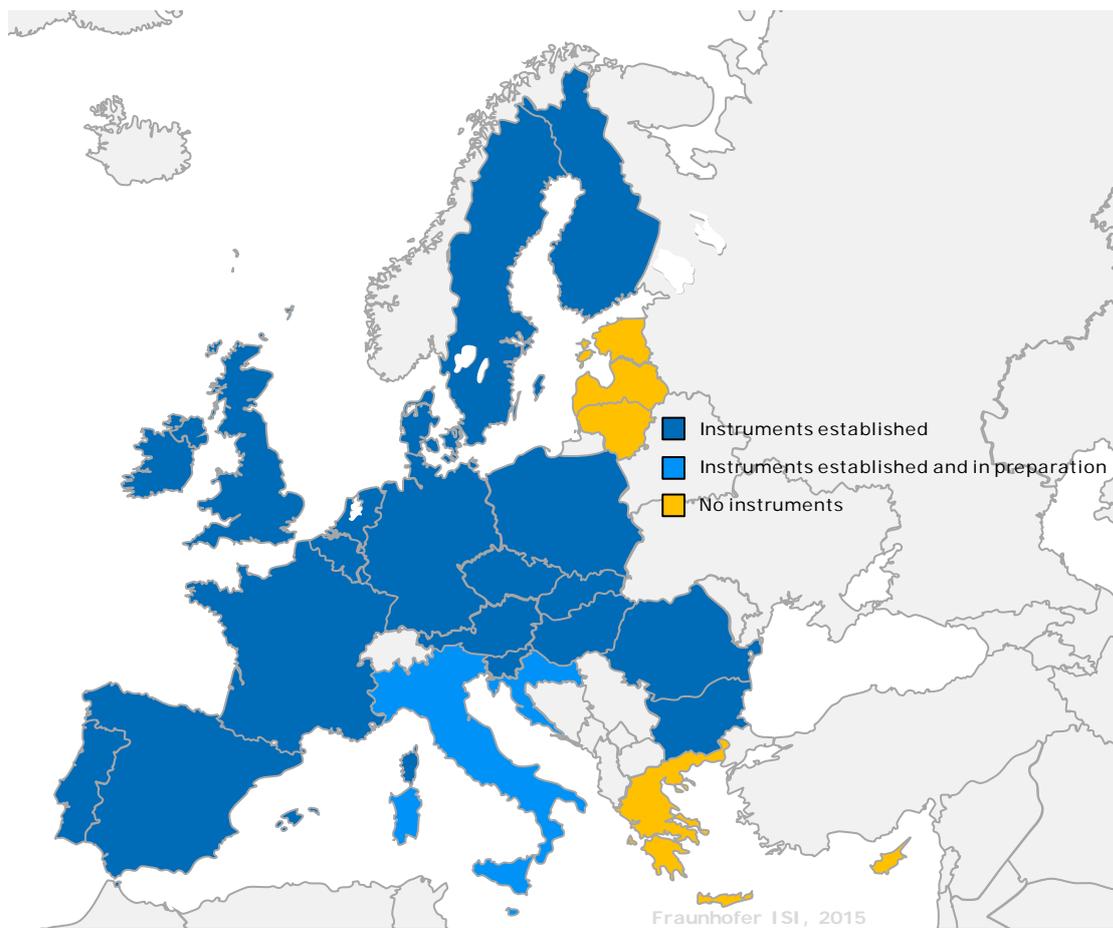
The overview provided in Figure 12 shows that most of the EU-28 have some instruments in place that at least partially address SMEs. A few points should be noted with regard to the interpretation of Figure 13. Firstly, instruments 'in preparation' only include those with specific information on their intended implementation (i.e. Croatia, Italy, and Malta). Other instruments might be in preparation as well but they might be at an early design state with no specific details available yet. Secondly, instruments

³⁸¹ E.g. Fleiter, T. et al. (2012): Adoption of energy-efficiency measures in SMEs — An empirical analysis based on energy audit data from Germany. In: Energy Policy (51) 2012, pp. 863-875.

³⁸² Trianni, A. et al. (2013): Innovation and adoption of energy efficient technologies: An exploratory analysis of Italian primary metal manufacturing SMEs. In: Energy Policy 61(2013), pp. 430-440.

may cover different types of SME, and focus on specific sub-groups, for example companies exceeding certain energy thresholds (e.g. in Bulgaria, Ireland, Italy, Portugal or Romania). Thirdly, through the utilisation of additional criteria for the definition of the target group, SMEs might not be covered at all, e.g. in a situation where all SMEs in a Member State do not exceed a minimum energy threshold that is required to participate in a particular programme. Finally, as stated in the introductory section, general instruments that do not explicitly address the three focus areas of this study have not been included.

Figure 12: General overview on the state of implementation for all types of instruments addressing energy management in SMEs.



(Shading for Belgium refers to instruments in at least one of the three regions.)

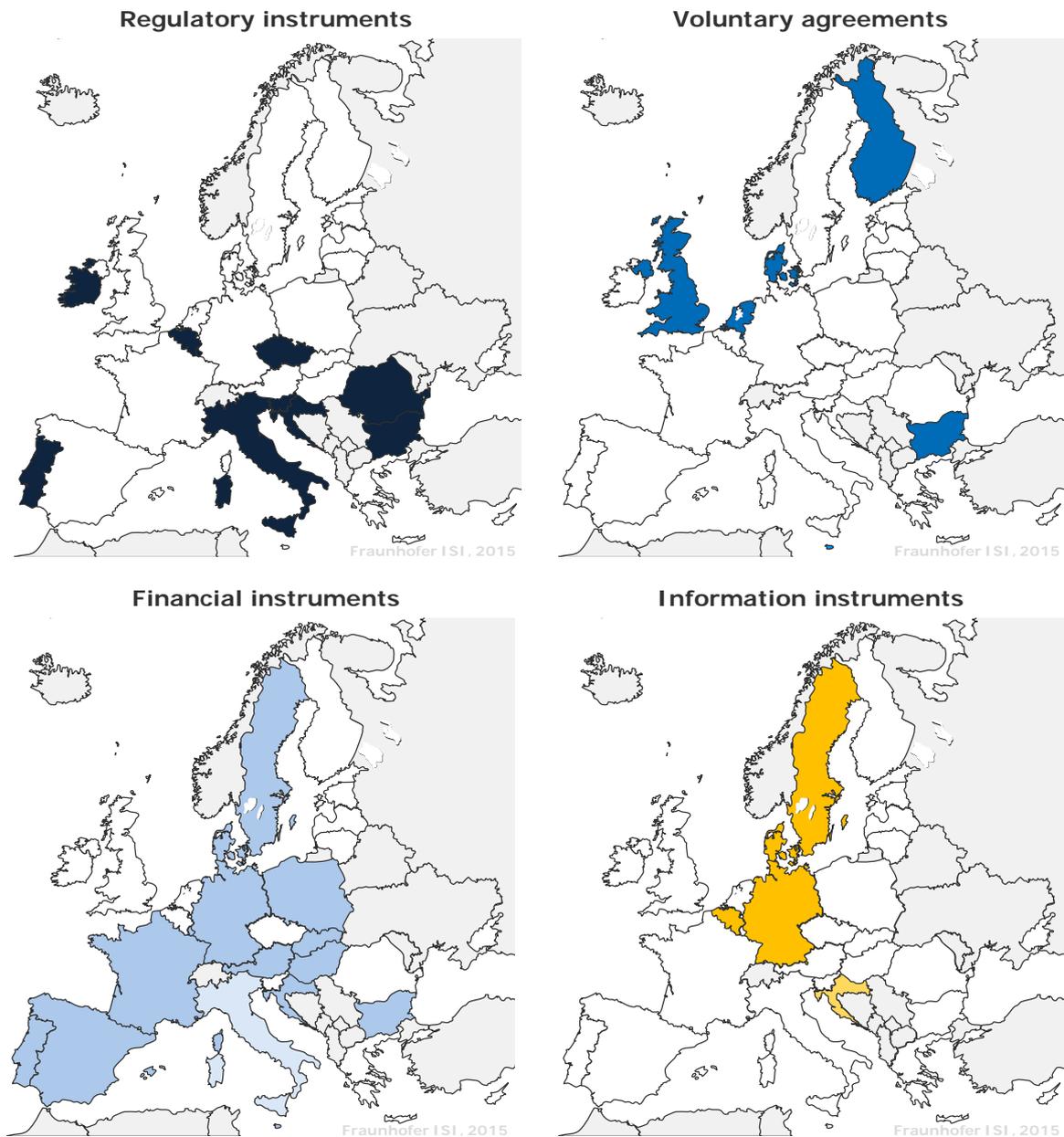
3.3.2. Instruments by type

Figure 13 provides a disaggregated overview of instruments by the four types of instrument distinguished for this study.

Countries with regulatory instruments that explicitly or implicitly address SMEs are Bulgaria, Croatia, Czech Republic, Ireland, Italy, Luxembourg, Portugal, Romania and Slovenia. The regulation in most of these Member States is directly linked to the mandatory energy audits by extending the target groups to SMEs through additional criteria. Bulgaria, Czech Republic, Ireland, Italy, Portugal and Romania may include SMEs, due to their additional energy thresholds (see also Table 71). In Luxembourg, there is

an instrument for energy-intensive companies, which could cover SMEs, but which is independent of the implementation of Article 8 (as Luxembourg was still in the process of national implementation at the time of preparing this study). The definitions of an SME in Croatia and Slovenia are based on lower financial thresholds than in the EED requirement, and the mandatory audit requirements may thus also cover companies that are strictly considered as SMEs. With regard to addressing energy management, Romania appears to be the only country in the EU-28 that has regulatory instruments potentially addressing SMEs. There, an enterprise above a certain consumption threshold is required to employ a certified energy manager.

Figure 13: Types of instrument addressing SMEs.



Dark shading: Instruments established
 Light shading: Instruments established and under preparation
 (Shading for Belgium refers to instruments in at least one of the three regions.)

Voluntary agreements related to energy audits and energy management systems are currently in place in Bulgaria, Denmark, Finland, Netherlands and the United Kingdom. In Malta, a corresponding programme is under development. As part of the Bulgarian Scheme, participating companies are obliged to conduct energy audits. In Finland, the voluntary agreements focus on energy audits, including the provision of funds for these audits. In Denmark energy utility providers may provide advice via audits or grant support. The scheme in the Netherlands obliges companies to develop and implement energy-efficiency plans. The programme in the UK is based on an energy tax reduction in exchange for the participating companies achieving agreed energy efficiency targets.

Financial instruments are used in a relatively large number of countries including Austria, Bulgaria, Croatia, Denmark, France, Germany, Hungary, Italy, Luxembourg, Malta, Poland, Portugal, Slovakia, Spain and Sweden. Financial instruments usually relate to energy audits or management systems, and are based on different mechanisms such as reductions of energy-related taxes. For example, the German eco tax cap for manufacturing industry, or the special equalisation scheme. There are also many approaches for providing funding for the introduction of management systems or the implementation of energy audits. The latter are often based on the provision of subsidies to companies up to a certain share or value of the cost of implementation. For example, funding through Bulgaria's Energy Efficiency and Green Economy Programme may cover up to 50% of the costs. The Croatian scheme provides up to approximately EUR 6,600 per company, the German SME Energy Consulting Program provides up to 80% to a maximum of EUR 8,000 for energy audits and implementation support, and a funding scheme in Luxembourg is reported to provide up to 40% with a limit of EUR 30,000 for energy-intensive companies. In Poland up to 70% of the eligible costs of energy audits are covered, the Portuguese scheme provides up to 50% of the energy costs with a ceiling of EUR 750 and in Sweden, SMEs may obtain a subsidy of 50% of the cost of an energy audit, also including their own staff effort up to a value of approximately EUR 5,500.

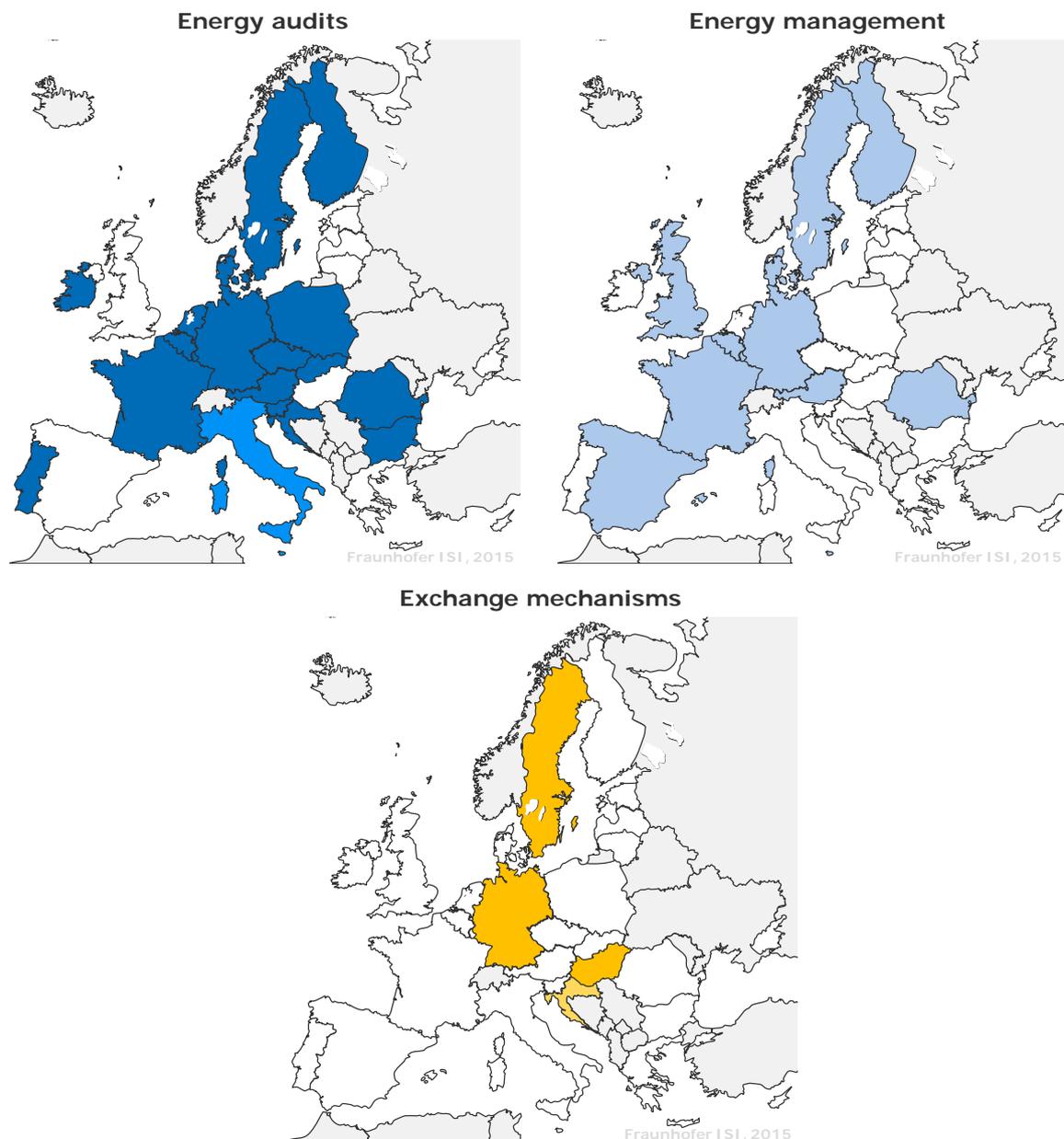
Examples relating to energy management systems include the German BAFA fund for energy management systems which provides funding for the initial certification of an energy management system, an external consultation and training of employees. The Spanish funding of energy management systems provides financial support if a minimum eligible investment for such a system is above EUR 30,000. Some countries, like Austria, also have regional approaches with varying funding opportunities in place.

The final type of instrument addressing SMEs is information-based. This approach is used in the Flanders region of Belgium, in Denmark, Germany, Slovakia and Sweden. Another instrument is currently under development in Croatia. The nature of the instruments is diverse, and they are often closely related to financial instruments, as the provision of funds or free services is often linked to these schemes. For example, the Flanders region in Belgium offers a service package that helps companies to educate personnel, and is thus based on a similar idea to parts of the German funding scheme for energy management systems mentioned above. Sweden offers the Energy Management System Light approach to companies. Several countries have also implemented exchange mechanisms that are based on network approaches. These are in place in Sweden and Germany, and Croatia's mechanism is currently under development. Alongside these structured approaches, various Member States rely on less formalised instruments, especially with regard to information exchange as further detailed in the section on exchange mechanisms below.

3.3.3. Instruments by focus area

The previous presentation of instruments by type covered all three focus areas of this study. In this section, a summary with regard to the specific focus areas is provided (see Figure 14). In the previous section, instruments were attributed to one category only, though some instruments can also be classified as hybrid instruments, e.g. as a combination of voluntary agreements and financial incentives. Here, some of the instruments address several focus areas, e.g. a combined funding scheme for energy audits and management systems.

Figure 14: Instruments by focus area addressing SMEs.



Dark shading: Instruments established

Light shading: Instruments established and under preparation

(Shading for Belgium refers to instruments in at least one of the three regions.)

As shown in the illustration, instruments related to energy audits for SMEs are present in many Member States. However, it should be noted that this general overview does not provide any indication of the efficiency and effectiveness of the programmes. For Malta and Italy, there is specific evidence that these countries are currently preparing additional instruments.

With regard to specific instruments dedicated to energy management systems, fewer countries tend to address this area with regard to SMEs. Corresponding instruments can be found in Austria, Denmark, Finland, France, Germany, Luxembourg, Malta, Romania, Spain, Sweden and the United Kingdom. Most of these are financial instruments, though the Romanian implementation is based on regulation. The approaches in Denmark, Finland and the United Kingdom are on voluntary agreements, and the approaches in Denmark and Sweden are also on information.

The structured use of exchange mechanisms is applied in comparatively few countries, i.e. Croatia, Germany, Hungary and Sweden. While the approach in Croatia is still under development, the system in Hungary is based on a combination of self-assessments, checks on the organisations' management systems and awarding procedure, complemented with conferences and dissemination activities. Sweden and Germany have a more structured approach, with the German approach having a more formal overall process for bringing different companies together than the Swedish one. Next to these formalised instruments, many Member States rely on less formalised systems for information exchange both between companies and the government. The various approaches include discussion platforms, websites and portals, information events (e.g. conferences, seminars, presentations and workshops), awards, help lines or desks, printed and online resources, and the provision of local contacts/offices. All these types of instruments may also contribute to facilitating the implementation of energy audits and their recommendations, but they have not been analysed in detail in this study, as they usually do not qualify as a policy instrument by definition.

4. Good practice and recommendations

In previous sections, the activities in the Member States related to Article 8 of the EED have been described. Based on the review of instruments and other information obtained during the study, the main challenges resulting from the implementation of Article 8, both for national institutions as well as for companies, have been identified. An overview of these challenges is provided in Table 78.

Table 78: Overview of challenges.

| Challenge | Section | Institutions* | Companies* |
|--|---------|---------------|------------|
| Implicit definition of large companies | 3.2.1 | • | • |
| Lack of data to identify large companies | 3.2.1 | • | |
| Missing details of national implementation | 3.2.1 | | • |
| Implementation deadline for energy audits | 3.2.1 | | • |
| Timeframe for introducing management systems | 3.2.2 | | • |
| Varying requirements for management systems | 3.2.2 | | • |
| Motives for implementation of alternative systems | 3.2.2 | • | • |
| Complexity of definition in case of additional criteria | 3.2.3 | • | • |
| Identification of relevant parts of a group | 3.2.4 | • | |
| Inclusion of mini-sites as part of groups | 3.2.4 | | • |
| Lack of English language guidance documents | 3.2.4 | | • |
| Appropriateness of penalties | 3.2.6 | • | |
| Consideration of cross-border transportation in energy audits | 3.2.7 | • | |
| Coverage of buildings in energy audits | 3.2.7 | | • |
| Ongoing definition of the monitoring process | 3.2.8 | | • |
| Administrative reporting process | 3.2.8 | | • |
| Relevance of energy demand in SMEs | 3.3 | • | |
| Limited organisational capacity of SMEs | 3.3 | • | |
| Financial capacity of SMEs | 3.3 | | • |
| Organisational decision-making in SMEs | 3.3 | | • |
| * Group that is mainly affected by the challenge. Institutions here refers to public bodies involved in the national transposition of Article 8. | | | |

Based on these challenges, this section provides a set of recommendations and good practice examples for national policy makers in Member States and for the European Commission.³⁸³ The EED provides Member States with a degree of freedom to choose

³⁸³ Other reports prepared as part of this study address the implementation of national minimum criteria for energy audits, the qualification of energy auditors and typical energy audit recommendations (see section 1.2).

how they implement Article 8, and examples of implementation and activities from the different Member States and other countries are provided. Given that the national implementations of Article 8 are quite recent, the recommendations and good-practice examples given here are based on preliminary implementation results, experience collected from similar instruments (e.g. originally introduced by the Member States under the Energy Services Directive), discussions held during the interviews, input from stakeholders as well as internationally recognised good practice.

A variety of relevant resources and projects, in addition to the national instruments listed in section 2, are listed in the appendix to this report. The examples provided in this section are illustrations to provide insights and inspiration on what can be perceived as good practice; they are neither exhaustive nor exclusive. It should also be noted that the framework conditions are quite varied across the Member States, e.g. in terms of the size of the target group, the institutional structure, etc. Therefore, the very nature of good practice is usually closely linked to the specific situation of a Member State.

The remainder of this section is structured as follows. Firstly, a set of general issues related to the implementation of Article 8 are discussed. This is followed by recommendations and good practice examples addressing large companies. The discussion on large companies follows the structure given by the key questions set out in section 1.2, i.e. the legal framework for large companies, current implementation by Member States and the enforcement of monitoring and assuring compliance. After discussing large companies, recommendations for SMEs are addressed. This follows the main areas described in section 1.2, i.e. energy audits, energy management systems and exchange mechanisms.

4.1. General issues

The following recommendations and good practice approaches for policy makers may help to address overarching issues related to the implementation of Article 8 at a national level:

- **Provision of easily accessible information to companies:** So far, some Member States such as Austria, Germany, Hungary and Italy, have provided well-structured FAQ or interpretation guidelines that are more easily accessible to companies than the actual national transposition laws. This tailored information makes it easier for companies to understand the specific requirements of the national legislation and it helps to reduce the uncertainty perceived by companies. As an additional benefit, these documents may also be helpful in reducing the number of requests to Authorities on the actual interpretation of the law. Some Member States, such as Italy and Malta, also have helpdesks for companies to provide support with the interpretation of the legislation. Malta's helpline is committed to providing assistance within a two week timeframe. Other countries rely on disseminating information via local agencies or through events such as conferences and information days. The effectiveness of these approaches will strongly depend on the size of the target group. Whilst information events can cover a major share of large companies in some smaller Member States, they tend to require a considerable amount of administrative resources in Member States with a large number of companies; Business Associations or similar organisations, and exchange platforms may also serve as useful information channels in such cases. Some countries, such as Malta, have directly informed each company about its obligation to conduct an energy audit.

- **Stressing non-energy benefits:** In recent years, the non-energy benefits of energy efficiency and energy management approaches, such as resource efficiency or increased knowledge and employee motivation, have been stressed in various documents.³⁸⁴ Some companies tend to focus on compliance rather than addressing real improvements in their energy performance. Stressing the benefits of energy audits and other energy management activities could therefore help to encourage these companies in the implementation of energy-efficiency measures. Communication of the benefits is therefore important, e.g. via high-level information material addressing top management as well as communication and support material for energy managers or shop-floor personnel. The resources indicated in the appendix of this report could serve as a starting point for developing such material.
- **Fast conclusion of the national transposition:** Some Member States had not yet transposed Article 8 into their national legislation at the time of preparing this study (see section 3.1). This late transposition creates uncertainty regarding the implications for companies operating in the national territory of these Member States. Several Member States expressed the view during the interviews that the timeframe for the transposition was too short given the scope of the EED as compared to the resources of the national implementation bodies. The rapid conclusion of the national transposition process in the remaining Member States should help companies to fully focus on the implementation of the national requirements.
- **Ensuring regular information exchange between MS:** It was pointed out by the interviewees that information exchange between the Member States is very important for learning how other EU-28 countries have implemented the EED. The activities of the Concerted Action Group are generally considered as helpful, but there are still some issues that need further discussion, e.g. how to deal with transportation and specific building-related aspects of Article 8. Ensuring the continuation of a regular information exchange can therefore be considered as good practice that should be maintained.

4.2. Large companies

In addition to the general issues discussed above, there are specific recommendations and good practices related to the general framework, the implementation and the enforcement of the mandatory audits.

4.2.1. Framework

With regard to the framework for implementing mandatory energy audits in large companies, the following good practice approaches and recommendations could help to overcome existing challenges:

- **Guidance on the definition of a non-SME:** As shown in section 3.2.1, there are differences in the way that SMEs and large companies have been defined across Member States. Due to the combination of three defining criteria, it can be difficult for companies to find out whether they are subject to the mandatory audits or not, based on the legislation alone. Guidance documents can help companies to better understand whether they are a large enterprise, by providing more detail on how to interpret the qualification criteria. In their guidance documents, Austria and Hungary provide clear tables for helping companies to identify their status. A company may change its status from being an SME to a large company by passing the

³⁸⁴ E.g. IEA (2014): Capturing the Multiple Benefits of Energy Efficiency. OECD/IEA: France.

threshold values. For determining a change in status, it seems reasonable to rely on passing the thresholds for two consecutive years, as set out in the guidelines for Germany and Italy. This may serve to avoid short-term effects triggering a change in status.

- **Provision of European information sources for identifying companies:** According to the definition in the EED, the number of employees, the balance sheet total and a company's turnover have to be considered when determining the classification of a company. It has been pointed out by some Member States that the number of employees can quite easily be identified, while the balance sheet total and turnover are difficult to determine, especially when dealing with multi-site/multi-national companies and SMEs. Guidance is required on how to improve the identification of relevant companies. It may also be appropriate to provide Member States with access to a European register that would allow national implementation bodies to more easily identify relevant companies and their interrelations across Europe.
- **English language guidance documents:** With regard to uncertainty, it should be noted that many countries have published their laws and guidelines in the national language only. This creates language barriers that make it difficult for multi-national companies to fully understand the specific requirements of national legislation. It is recommended that all Member States provide at least a summary of their national legislation in English, especially targeted at companies. For example, Denmark had provided its guidance documents in English as well as Danish at the time of preparing this report. Other Member States have also stated their intention to follow this example in the future.
- **Setting up pan-EU-28 guidance:** There is a general lack of guidance for companies that details the situation across the different Member States. While this study provides information on the implementation across Member States, it is recommended that a specific guidance document is developed for multi-national companies across the EU-28. Such a guidance document could include a general overview of the transposition of Article 8 across Member States together with a country-specific comparison of the main requirements.

4.2.2. Implementation

Further recommendations with regard to the implementation of the requirements of Article 8 are as follows.

- **Prolonged timeframe for fully implementing alternative systems:** The implementation of alternative systems, such as certified energy management systems, can take a considerable amount of time due to the required organisational changes. While some Member States require alternative systems to be fully implemented by 5 December 2015, others such as Denmark, Germany, Greece, Ireland, Malta and Sweden, have opted to provide companies with further time. As organisational changes take a considerable amount of time and effort, a later deadline can be considered as good practice. To ensure that companies start sufficiently early with their implementation, and to avoid prolongation becoming a means of avoiding the original deadline, companies could be required to provide information on the intended implementation to the responsible body in their Member State, provided that the required structures to collect this information are established. For example, Sweden required companies to report on their intended implementation route by 5 December 2015.

- **Inclusion of foreign companies in the calculation of threshold values:** For the calculation of the threshold values that are required to determine the SME status of a company, all company parts including linked companies need to be taken into consideration. As identified in section 3.2.4, different Member States consider these links for parts of a multi-national company that are located in and sometimes also outside of their national territory. As a consequence, two otherwise identical parts of a multi-national company will be treated differently in two Member States if one part is considered as part of a large company while the other is considered as a stand-alone company (due to an exclusion of the foreign parts). It is advisable to ensure that all parts of multi-national companies are treated equally across all Member States unless there is specific provision such as the additional inclusions mentioned above. In addition, it should also be considered how to adequately treat very small sites, e.g. local offices with few employees. A full energy audit of such premises might be inappropriate for economic reasons even if they belong to a large group.
- **Harmonised sampling approaches:** Companies that operate multiple similar sites may rely on a sampling approach for fulfilling the requirements of the mandatory audits. Multi-national companies may be subject to various sampling approaches when they operate similar sites in different countries. Transparency on the different approaches used may facilitate the smoother implementation of energy audits across Member States. The provision of guidance should also be considered regarding the minimum coverage of energy demand that has to be addressed within an audit. At the current time, corresponding values vary considerably. For example, Finland requires that 95% of the energy demand is taken into consideration while in France 65 or 80% (depending on the timeframe) needs to be considered.
- **Overview of the inclusion of buildings into audits:** The responsibility for energy audits in buildings is dealt with in different ways across Member States. This area is especially difficult to handle as energy consumption is often split across several parties, and various split incentives arise. Some countries, like Italy, stress the role of the landlord in having responsibility for the audit. Others like Austria, Finland and Hungary, hold the tenant responsible for the audit, whilst other Member States state that it depends on the area of influence (see section 3.2.7). All of these approaches have advantages and disadvantages. For improving transparency, it is recommended that a summary is made available on the responsibilities in the different Member States.
- **Harmonise treatment of international transport:** According to the EED, transport has to be covered by the mandatory energy audits. Transportation across borders is treated differently by various countries. Depending on the national interpretation, on the one hand this may lead to double auditing of some international transportation activities (if both countries take the same transportation activities into account). On the other hand, cross-border transportation may not be counted if both Member States exclude this from the mandatory energy audit. Additional guidance for Member States on how to treat these types of situations would be helpful to avoid this double counting (or exclusion) of the same transport energy.

4.2.3. Enforcement

The third area for recommendations and good practice is related to the enforcement of mandatory audits. This especially concerns setting penalties and establishing monitoring activities.

- **Ensure appropriate penalties:** As shown in Figure 11, the maximum penalties for companies not complying with the requirements of the mandatory energy audits are different across Member States. With regard to defining the minimum penalties, care must be taken that these are well above the actual costs of an energy audit, including a mark-up for the internal staff costs. If penalties are set too low, companies may simply choose to pay a fine instead of conducting an energy audit. It should also be ensured that penalties do not serve as a substitute for audits. However, penalties should also be proportionate to the financial capacity of a company; a fixed penalty may thus not be appropriate. For example, in France the amount of penalty is determined on a case-by-case basis and is related to the company's revenue. The penalty may not exceed 2% of company revenues (or 4% of revenue in the case of repeated non-compliance). In Spain, the amount of penalty may not exceed 10% of the turnover of the company (based on preliminary information). It should be noted that some Member States have opted to impose additional fines to enforce the implementation of the mandatory audits. For example, in Croatia, senior management has to pay a fine of up to EUR 2,000, in Ireland up to EUR 5,000 and in Slovenia up to EUR 10,000 (see also section 3.2.6).

Industrial Assessment Centers Database

The Industrial Assessment Centers (IAC) are funded by the United States Department of Energy. The IAC organises energy assessments in SMEs in the manufacturing sector. These assessments are carried out by a team of students that are instructed by a university professor. The students collect site specific energy-related data and generate a report with recommendations on energy savings; the basic principle is thus quite similar to an energy audit. The assessments started in 1981 and the results are collected in a publicly accessible database. This database holds information on the implementation status of measures, achievable savings in terms of dollars and resources, implementation costs as well as other related information.³⁸⁵ At the current time, the database contains roughly 130,000 recommendations on energy efficiency measures that have been generated during more than 17,000 assessments.³⁸⁶

URL: <https://iac.rutgers.edu/database>

- **Implement active monitoring approach:** Currently, Member States monitor the implementation of the mandatory energy audits in different ways. In some countries, the companies are proactively required to notify the authorities of the implementation of an audit or an alternative system; other MS rely on spot checks and thus require companies to provide proof of completing the audits only on request. Generally, the audits provide a very good opportunity to provide Member States with information on energy saving potentials and cost-effective measures if the data is collected in an appropriate way. Austria, Croatia, Italy, Malta and Poland are planning to establish databases where data resulting from audits will be summarised (see also section 3.2.8). However, reporting the corresponding data may also be considered as an additional administrative burden on companies. Modern communication technologies and corresponding implementation, as planned in some countries such as Austria, where companies have to feed in their audit data to a web-based platform, help to reduce the administrative effort both

³⁸⁵ Description based on Rohde et al. (2014): An insight into the ecodesign process – the example of steam boilers. Proceedings of the eceee industrial summer study, pp. 449-460.

³⁸⁶ Center for Advanced Energy Systems (ed.) (2015): Industrial Assessment Centers Database. Online: <https://iac.rutgers.edu/database/>. Accessed: 17.09.2015.

for companies and authorities to a minimum. A very good example of such a system is the Industrial Assessment Centers database operated in the United States (see box above).

4.3. Small and medium-sized companies

Besides the general recommendations provided earlier, the following specific recommendations are provided on encouraging SMEs to conduct energy audits, implement recommendations and participate in exchange mechanisms. As shown in previous sections, there is a broad range of instruments that have been tailor-made to the specific situations of the SMEs in the respective countries.

4.3.1. Energy audits

With regard to energy audits, the following approaches can be taken:

- **Encouragement of energy-intensive companies:** With regard to implementation in different Member States, and specifically to regulatory instruments, various countries such as Bulgaria, Czech Republic, Ireland, Italy, Portugal and Romania, rely on an energy-based criterion to enlarge the target group for the mandatory audits. Since energy saving potentials tend to scale with energy demand, this seems to be a good practice approach to enlarging the target group. However, it is necessary to make sure that this enlargement is both easy to deal with for the company, i.e. that they can easily determine whether they fall under the definition, and for the authorities so that they can easily identify relevant companies. Alongside this mandatory approach, it could also be helpful to provide some initial funding for certain companies with high energy consumption to overcome barriers. Granting such funding could be linked to implementing a certain share of recommendations from the audits.

One-stop shops

Bundling all information on support programmes together in one place can help to reduce the transaction costs for SMEs in identifying available and relevant programmes. Support programmes in Norway are provided by ENOVA which hosts a Centre for funding and reporting (Senter for søknad og rapportering). In this Centre, a simple overview of available instruments is provided, and for each programme there is a direct link to further funding criteria and programme guidelines, which are written in simple language. Questions can also be answered during office hours and so information is quite easily accessible.

URL: <https://soknad.enova.no/startside.aspx>

- **Provision of implementation support:** After completing an energy audit, mandatory or otherwise, implementation of the recommendations is necessary to actually realise energy savings, even though this is not required by Article 8. It is good practice not to limit financial support to the audit alone, but to also cover part of the implementation. Otherwise there is a risk that the recommendations of the audit report are not realised by a company. This is especially important for SMEs as they do not have the same organisational capacity as larger enterprises to take audit recommendations forward. Some countries, like Germany for example, provide implementation support beyond the actual execution of an audit.

Number and distribution of ISO 50001 certificates in Europe issued in 2014.

The map below shows the number of ISO 50001 certificates in the MS of the European Union. In terms of number of certificates, Germany, the United Kingdom and Italy have the highest number of certificates. The high number in Germany is due to effects of national policy making (see details in section 2.1.13).

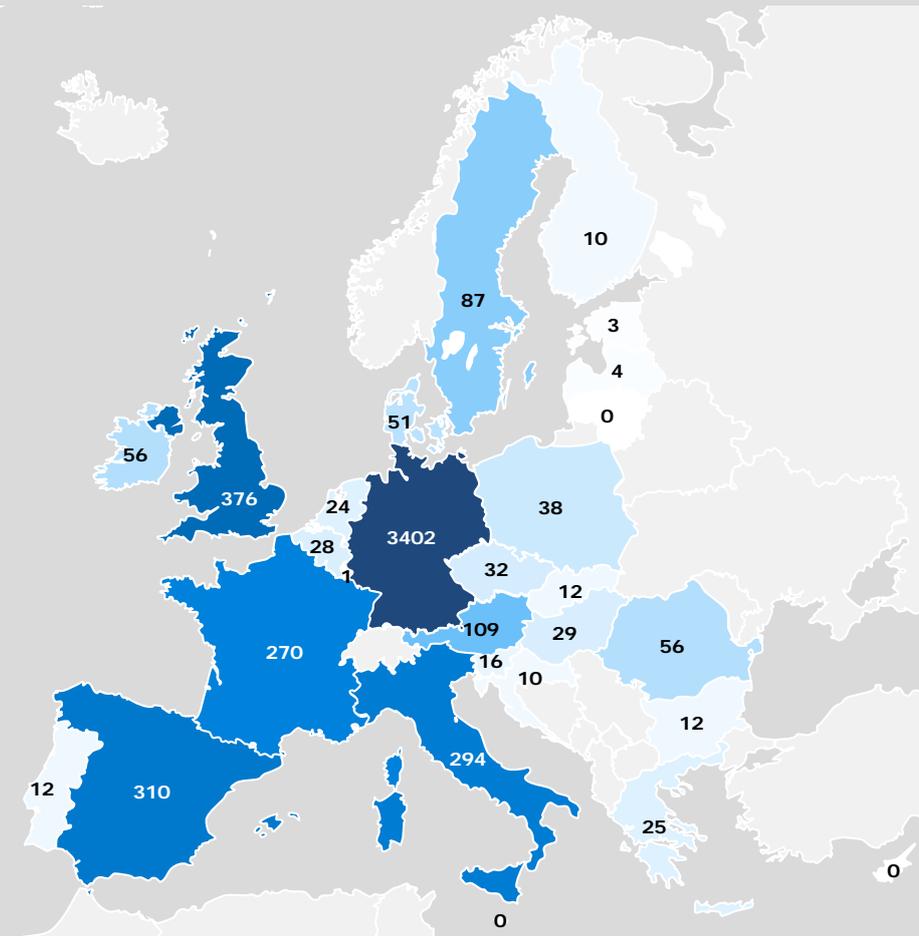


Figure 15: Number of ISO 50001 certificates in the EU-28 MS in 2014.³⁸⁷

- Provision of low-interest capital for investments in recommendations:** The implementation of recommendations from energy audits generally entails investments in new or retrofit technologies. As the costs of energy-efficient equipment are often higher than the standard equipment, companies need access to sufficient capital to finance these additional expenditures. Various countries have funding schemes, or provide cheap loans to SMEs for investments in energy-efficient technologies. As these schemes are not directly related to energy audits, but focus on specific technological investments, they have not been covered in this study. Nevertheless, these schemes can be considered as a helpful counterpart for auditing schemes.

³⁸⁷ Own illustration based on ISO Survey on Management System Standard Certifications – 2014. Values for 2014. Online: http://www.iso.org/iso/iso-survey_2014.zip. Accessed: 01.03.2016.

- **Establishment of one-stop shops and involvement of key institutions:** Due to the limited organisational capacity of SMEs, it is important that they can easily identify funding programmes that are relevant for conducting audits or for implementing their recommendations. Especially in the larger Member States, support might be provided by various institutions and on different regional levels or certain topics which are part of funding under different programmes. One-stop shops for support can be helpful to reduce the information barriers for companies. An implementation example from Norway (as a smaller country) is depicted in the box below. The involvement of key institutions (e.g. trade associations, chambers of commerce) in the dissemination of information on support can also be an effective means to disseminate information, alongside dedicated events on energy-efficiency.

4.3.2. Energy management

According to Article 8, energy management systems (EMS) are considered as alternative systems to the implementation of energy audits (see section 3.2.2). Some MS, like Denmark, Finland, Germany, Luxemburg, Malta, Spain, Sweden and the United Kingdom, have opted to further incentivise the implementation of energy management systems (either by a voluntary approach or by financial incentives). However, the degree of diffusion of EMS across Member States is low compared with the potential target group (number of companies) (Figure 15).

In the following sections, an overview of good practice approaches related to energy management is provided:

- **Step-wise implementation support:** The implementation of energy management systems is a process that takes time and has various elements. Several countries therefore provide support platforms that guide companies through the implementation process. Two good examples come from Germany and Ireland as shown in the box below. Similar approaches are also available in other countries, e.g. in the United States (eGuide; see resources). This system is based on a three level approach and is especially interesting as it shows that the ISO 50001 certification is only level two on a three level ranking, thus pointing out that additional elements beyond ISO 50001 can also be included in an energy management system.
- **Advice and first certification support:** In conjunction with the implementation of energy management systems, various countries provide financial support for advice and first-time certification of energy management systems, or for preparing the implementation of such systems. Sweden for example provides funding for setting up IT systems as a basis for data management systems.
- **Guidance for different sectors:** A good approach for facilitating the implementation of energy management could include the provision of specific guidelines on energy management for different sectors. This could make it easier for companies to implement a corresponding energy management system as the general ISO 50001 standard has to be applicable to all types of company, while a specific guidance could address the specific issues of particular sectors. Various resources have been developed in Europe for such purposes. Spain, for example, has published various guidelines on energy management for different purposes as shown in the resources highlighted in the appendix.

Step-wise implementation support

Germany and Ireland both operate systems that can help companies with the successive implementation of energy management systems.

The German mod.EEM is a modular system on energy management operated by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety and the Ministry for Climate Protection, Environment, Agriculture, Conservation and Consumer Protection of the State of North Rhine-Westphalia. The system helps companies to gain better transparency for energy management activities and the achievement of energy-related goals. For this purpose, the system includes several guidelines and checklists. Depending on the type of analysis and the input, the system provides an overview of the current implementation state by indicating a score ranging from 0 to 100. Thus it helps companies to easily track their activities and to identify gaps in implementation. The main target groups of the web-based platform are companies of all sizes, but engineering consultants, energy utilities and certifiers, as well as multipliers such as chambers of industry and commerce, are also addressed. The system has been rated as compliant in supporting companies with DIN EN ISO 50001:2011 on energy management systems, and DIN EN 16247-1:2012 on energy audits. The system can be used free of charge and offers trial access; for actual usage, a registration is required. According to the website operators, more than 1,800 companies have registered since 2009.

A similar approach has been taken in Ireland with the Energy Map platform. Energy Map is an internet-based platform operated by the Sustainable Energy Authority of Ireland. The system has been created as a free tool for small and medium-sized companies. It aims to assist them in setting up a best practice approach for an action plan on energy management and to thus contribute to the implementation of ISO 50001 in organisations. The system is based on five pillars that address commitment, identification, planning, taking action and reviewing. The areas are further disaggregated in to step-by-step guidance for setting up a best practice action plan, which includes 20 steps. The steps can be completed independently. The steps provide information on what to do in each area and how to do it. They also address typical problems and solution strategies as well as information on the step duration and on subsequent action. Furthermore, links to additional resources are provided. Registration is optional but allows users to keep track of the steps they have read and completed.

URLs: www.modeem.de
www.seai.ie/EnergyMAP/

4.3.3. Exchange mechanisms

This section addresses exchange mechanisms. These are activities that aim to provide companies with technical assistance and targeted information to encourage them to adopt energy efficiency measures. Providing recommendations based on European implementation examples is challenging, as comparatively few Member States actually rely on formalised instruments in this respect. Nevertheless, three good practice approaches appear to be especially relevant in this area:

- **Regular common exchange and follow-up for SMEs:** When it comes to structured exchange mechanisms, a regular exchange between companies or among companies, policy makers and neutral experts, and a continuous follow-up process is crucial for assuring the impact of the mechanisms. Furthermore, a monitoring

process is very important. One structured approach in this area is the concept of energy efficiency networks that has been developed in Switzerland and Germany (see box below).

- **Ensuring institutional support:** The analysis of the implementation of exchange mechanisms in Member States shows that support by key institutions from industry (e.g. trade associations, chambers of commerce, service providers, energy utilities) can considerably facilitate the exchange of information as these institutions often have more direct access to SMEs than government, as they are often their first contact point. The involvement of such institutions in various types of activities can therefore be a good strategy to trigger a regular dialogue with SMEs.
- **Using a mix of approaches:** As pointed out earlier, a main focus of the analysis of exchange mechanisms has been on structured instruments used by Member States. Nevertheless, many countries also rely on less formalised approaches as mentioned above. This information can be provided via printed documents, diverse types of events such as conferences and workshops and also by continuously operated help lines or by independent local experts. An adequate mix of these instruments can help to reach SMEs and to encourage them in the implementation of energy audits and their recommendations.

Energy Efficiency Networks

Energy efficiency networks are one approach to creating a continuous exchange of information between companies. The concept of the 'Learning Energy Efficiency Networks (LEEN)' has been transferred to Germany, based on Swiss experiences dating back to the 1990s. A similar approach has also been used in Sweden. Within Learning Energy Efficiency Networks, 10 to 15 regionally based companies from different sectors share their energy efficiency experiences in moderated meetings. The networks are initiated by third parties such as energy utilities, chambers of commerce or consultants, who establish the group of network companies. The network process starts with an energy audit and the identification of cost-effective energy efficiency measures in each company. Based on the results of the energy audit, the participants decide upon a joint target. This target is allocated to the partners according to their efficiency potential. The subsequent networking process enables a continuous exchange of information on energy efficient solutions. The process is fed by the experiences of the network partners as well as external experts. The network process is accompanied by a yearly monitoring of the performance of each company. Typically, the networks operate from three to four years.

The German Federal Ministry for the Environment funded a pilot project with 30 pilot networks. Within this project, 360 companies were part of a network. Approximately 3,600 cost-effective measures were identified, corresponding to an energy saving potential of more than 1,200 GWh per year. The identified measures had an average internal rate of return of more than 30% demonstrating the high level of viability. Within the context of the national energy efficiency strategy of Germany, the networks play an important role for the industrial sector. In the context of the National Action Plan for Energy Efficiency (NAPE), German industry together with the German government has signed a voluntary agreement to establish 500 networks by 2020.

URLs: www.energie-effizienz-netzwerke.de
www.effizienznetzwerke.org

5. Conclusions

This study provides an overview of current implementation practices, tool and instruments related to Article 8 of the EED. This report specifically deals with the implementation of Article 8 in relation to both large enterprises and SMEs across EU Member States. In previous sections, the specific approaches by Member States to the implementation of Article 8 and the associated challenges have been discussed. Good-practices have also been identified and described. Based on this information, this concluding section deals with answering the key questions that were originally stated in the introductory section of this report.

5.1. Conclusions with regard to large enterprises

With regard to the current framework for the implementation of Article 8, and the enforcement of the requirements for large enterprises, the following conclusions can be drawn.

The conclusions for the legal framework for transposing Article 8 are as follows:

- *What legislation have Member States established to meet the obligations of Article 8 for large enterprises?*

Member States were expected to fully transpose the Directive into national legislation within a period of roughly 18 months, by June 2014. Most Member States completed the transposition in 2014 and 2015. However, at the time of preparing this study, some Member States such as Spain, Latvia, Luxembourg, Lithuania and Poland, were still in the process of transposing the requirements of Article 8 and the implementation details into their national legislation.

- *How are large enterprises defined within the national legislation related to Article 8?*

Whilst some Member States directly rely on the EU definition of SME, others employ an explicit definition of a large enterprise. Belgium (Flanders), France, Slovakia and Spain modified the employee threshold to above 250 employees. With regard to financial criteria, Denmark and the United Kingdom included the exact threshold values; Croatia and Slovenia modified the financial thresholds well below the EU threshold value. And finally, there is a group of countries which connect the criteria in a different way as compared to EU definition. This group includes Belgium (Flanders), Croatia, Denmark, France, Spain and Sweden. Some Member States have also opted to rely on additional criteria to enlarge the target group. For example, Bulgaria, Ireland, Italy and Romania include additional companies that are above a certain threshold for energy demand.

- *How are multi-national companies and large enterprises with several sites dealt with in the Member States?*

Generally, Member States deal in different ways with multi-national and multi-site companies. Some Member States take all company parts located inside and outside their national territory into consideration for determining the status as an SME or non-SME. Others rely on the company parts inside the national territory only. Whether a specific company part assessed as non-SME following the aforementioned process is subject to a mandatory audit further depends on whether every site or company part located *inside* and *outside* the national territory has to con-

duct an energy audit. The majority of Member States have limited the scope of the energy audits to company parts located within their national territory.

With regard to the implementation of mandatory audits, the following findings can be stated:

- *What kind of activities have the Member States established to promote the use of energy audits and energy management systems in large enterprises?*

Instruments addressing the implementation of both audits and energy management systems are mainly focussed on the mandatory requirements set out by the Directive. Some Member States, however, are providing financial incentives for certain activities and sectors (e.g. energy-intensive companies). Furthermore, many countries use different types of events and portals for information exchange, as well as tools to help companies in the implementation of both types of activities.

- *What kind of compliance options and exemptions from regular energy audits are granted to large enterprises in the Member States?*

Exemptions from mandatory energy audits are mainly based on the introduction of an energy or environmental management system as permitted by the Directive. In their national legislation transposing Article 8, some Member States also excluded certain groups of companies. For example in Denmark, companies with an annual energy consumption below 100,000 kWh, in Malta below 50,000 kWh and in Romania below 11,630 MWh are exempted from the regulation to conduct an energy audit. Portugal focuses on the financial viability of the energy audit, and states in its national legislation that if four yearly audits are not viable, they only have to be carried out every eight years.

- *To what degree have large enterprises currently implemented their regular energy audits in the Member States?*

Information on the current implementation in the different Member States is generally scarce. It should also be noted that the number of companies that will be subject to the audits varies considerably across the different Member States, ranging from around 80 companies in Malta to an estimate of 50,000 companies in Germany.

With regard to the enforcement of the requirements of Article 8 on mandatory audits, the following observations can be made:

- *What administrative processes have the Member States established to monitor large enterprises compliance with legislation and measure the impact of resultant energy efficiency improvements?*

Most of the countries were still in the process of defining how to organise their monitoring systems at the time of preparing this study. The same is true for deciding which data to collect and how to monitor the impact of the audits. Yet preliminary results indicate that some countries expect an active input from the companies subject to a mandatory audit, e.g. by submitting a summary of audit results to the responsible authorities, while others intend to verify the implementation by checking a random sample of companies.

- *What kinds of penalties have been established for non-compliance with the provisions of Article 8 for large enterprises?*

The penalties set out by the different Member States vary considerably. Penalties for companies generally have a range from EUR 10,000 in Austria to EUR 200,000

in Romania. Within the transposition of penalties into national legislation, the Member States have taken different approaches and may impose a penalty on the company, the management of the company and/or on the energy auditor. The majority of Member States intend to penalise companies; few Member States, namely Ireland (EUR 5,000), Croatia (EUR 2,000) and Slovenia (EUR 10,000) have decided to impose the penalty at the management level (director of the company). Hungary has decided to also impose a penalty of EUR 320 on the energy auditor for non-compliant behaviour. Some other countries like Denmark, Finland, France, Netherlands and Sweden have not yet defined any penalties and intend to decide these on a case-by-case basis. Spain sets out, in its draft legislation, a penalty of EUR 60,000; in addition the amount may not exceed 10% of the turnover of the company.

5.2. Conclusions with regard to SMEs

The conclusions regarding SMEs are based on the different focus-areas analysed in this study, i.e. energy audits, energy management systems and exchange mechanisms.

With regard to encouraging or compelling SMEs to undergo energy audits and to subsequently implement the recommendations, the following conclusions can be drawn:

- *What kind of supporting framework have the Member States established aimed at providing SMEs with technical assistance and targeted information?*

The analysis of instruments indicates that Member States rely on numerous approaches to support the implementation of energy audits. These instruments include regulatory instruments, information based instruments, financial instruments as well as voluntary agreements. The specific type, implementation and design strongly depend on the situation in the individual Member State, such as the general energy and climate policy design or the relevance of certain SME segments. Various Member States use a mix of policies to address SMEs.

- *What support schemes for SMEs that cover costs of an energy audit and of the implementation of cost-effective recommendations from the energy audits are provided by the Member States?*

Support schemes that are in place address partial funding of energy audits or financial support for implementing energy-efficient technologies. They also include low-cost loans for companies. With regard to audit costs, both the covered share of the audit costs and the upper absolute ceiling vary. For example, the German SME Energy Consulting Program provides up to 80% and a maximum of EUR 8,000 for energy audits and implementation support; a funding scheme in Luxembourg is reported to provide up to 40% with a limit of EUR 30,000 for energy-intensive companies; in Poland up to 70% of the eligible costs of energy audits are covered; a Portuguese scheme provides up to 50% of the energy costs with a ceiling of EUR 750, and in Sweden, SMEs may obtain a subsidy of 50% of the cost of an energy audit, including the cost of their own staff effort up to a value of approximately EUR 5,500.

With regard to energy management systems, conclusions on Member States encouraging or compelling SMEs to implement energy or environmental management systems can be stated as follows:

- *What kind of conditions have the Member States created that aim at providing SMEs with technical assistance and targeted information?*

With regard to information and assistance for implementation, the Member States basically use the same approaches as for audits. In addition, some Member States like Germany and Ireland provide dedicated tools to help companies with a step-wise implementation of corresponding systems. Some though not all countries have also developed guideline documents that are intended to facilitate the implementation process in their countries.

- *What incentives or support schemes have Member States introduced to implement energy or environmental management systems in SMEs?*

With regard to specific instruments dedicated to energy management systems, fewer countries tend to address this area as compared to funding for energy audits. Instruments on energy management can be found in Austria, Denmark, Finland, France, Germany, Luxembourg, Malta, Romania, Spain, Sweden and the United Kingdom, and most of these are financial instruments. For example, implementation in Romania is based on regulation, while the approaches in Denmark, Finland and the United Kingdom use voluntary agreements and the approaches in Denmark and Sweden also rely on information instruments.

- *How have Member States engaged with organisations representing SMEs to demonstrate how energy management systems could help their businesses?*

There is no general approach that is used across Member States, as institutional structures differs between countries. However, many Member States try to maintain close contact with industrial associations and representatives, e.g. trade organisations or chambers of commerce, by setting up or organising joint events on energy-related matters.

With regard to exchange mechanisms, the following conclusions on the implementation in Member States can be drawn:

- *What specifically has been done to raise awareness and expertise among SMEs?*

The use of formalised and structured exchange mechanisms is limited to comparatively few Member States, i.e. Croatia, Germany, Hungary and Sweden. While the approach in Croatia is still under development, the system in Hungary is based on a combination of self-assessments, checks on the organisation's management systems and awarding procedure, complemented with conferences and dissemination activities. Sweden and Germany have a more formal approach with the German approach having a more formal overall process for bringing different companies together than the Swedish one. Alongside these formalised instruments, many Member States rely on less formal systems for information exchange both between companies and the government. The various approaches include discussion platforms, websites and portals, information events (e.g. conferences, seminars, presentations and workshops), awards, helplines or helpdesks, printed and online resources, and the provision of local contacts/offices.

- *What types of organisations that represent SMEs can contribute to the exchange of information?*

The analysis of the implementation of exchange mechanisms in Member States suggests that support by key institutions from industry and from the government (e.g. trade associations, chambers of commerce, service providers, energy utilities) can effectively facilitate the exchange of information as these institutions often have more direct access to SMEs as they often are their first point of contact.

- *How has the European Commission assisted Member States by supporting the exchange of good practices?*

Generally, the provision of the guidance note and the activity of the Concerted Action working group have been perceived as the main support mechanisms provided by the European Commission. While both approaches are generally considered as helpful by the Member States, it has been pointed out that a faster provision of the guidance note as well as a more intensive exchange on different issues related to the implementation of the EED, e.g. on the definition of companies, issues related to transport or on the identification of multi-national companies, would have been welcome to facilitate and accelerate the implementation process.

5.3. Conclusions for further enhancing the implementation of Article 8

A summary of the main conclusions that respond to the challenges identified in this study (Table 77) is given in Table 78; an overview of the recommendations and good practice examples for further enhancing the implementation of Article 8, is provided.

Most of the recommendations made address national policy makers in the Member States, and point out how they might further develop their national implementation of Article 8 based on experience from other countries. Others mainly concern the European Commission, as the related activities have mainly to be dealt with across the Member States. These include the provision of documents that describe the situation across Member States (such as this study), addressing a continual exchange of information between the different Member States or activities that address issues such as international transport that cannot be dealt with solely at a Member State level.

Table 79: Overview of recommendations (with good practice examples where available).

| Recommendations [with good practice examples] | Section | Member States* | European Commission* |
|--|---------|----------------|----------------------|
| Provision of easily accessible information to companies [FAQs/interpretation guidelines (e.g. Austria, Germany, Hungary, Italy)] | 4.1 | • | |
| Stressing non-energy benefits [Information on non-energy benefits (e.g. IEA study)] | 4.1 | • | |
| Fast conclusion of the national transposition | 4.1 | • | |
| Ensuring regular information exchange between Member States [Regular meetings across Member States (e.g. CA group)] | 4.1 | | • |
| Guidance on the definition of a non-SME [Easy classification tables/systems (e.g. Austria, Germany, Hungary)] | 4.2.1 | • | |
| Provision of European information sources for identifying companies | 4.2.1 | | • |
| English language implementation documents [Translation of national key documents (e.g. Denmark)] | 4.2.1 | • | |
| Setting up pan-EU-28 guidance | 4.2.1 | | • |
| Prolonged timeframe for fully implementing alternative systems [Report on intended implementation until deadline (e.g. Sweden)] | 4.2.2 | • | |

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|--|-------|---|---|
| Inclusion of foreign companies in the calculation of threshold values | 4.2.2 | • | |
| Harmonised sampling approaches | 4.2.2 | | • |
| Overview of the inclusion of buildings into audits | 4.2.2 | | • |
| Harmonised treatment of international transport | 4.2.2 | | • |
| Ensure appropriate penalties | 4.2.3 | • | |
| Implement active monitoring approach [Follow-up platforms (e.g. to be established in Austria, Croatia, Italy, Malta, Poland); Systematic collection of audit results (e.g. United States)] | 4.2.3 | • | |
| Encouragement of energy-intensive companies [Additional criterion for including/encouraging energy-intensive companies (e.g. Bulgaria, Czech Republic, Ireland, Italy, Romania)] | 4.3.1 | • | |
| Provision of implementation support [Implementation support for suggested measures (e.g. Germany)] | 4.3.1 | • | |
| Provision of low-interest capital for investments in recommendations | 4.3.1 | • | |
| Establishment of one-stop shops and involvement of key institutions [Central hub for seeking support and for reporting (e.g. Norway)] | 4.3.1 | • | |
| Step-wise implementation support [Provision of web-based implementation follow up (e.g. Ireland, Germany, United States)] | 4.3.2 | • | |
| Advice and first certification support | 4.3.2 | • | |
| Guidance for different sectors [Providing energy management guidelines for specific sectors (e.g. Spain)] | 4.3.2 | • | |
| Regular common exchange and follow-up for SMEs [Organisation of various information sources and events as in many Member States (e.g. conferences, workshops, helpdesks, etc.)] | 4.3.3 | • | |
| Ensuring institutional support [Cooperation with key institutions (e.g. business associations) for informing companies about the process as in many Member States] | 4.3.3 | • | |
| Using a mix of approaches [Utilisation of several approaches to cover a wide range of SMEs (e.g. Denmark) where appropriate] | 4.3.3 | • | |
| * Groups that are likely to be able to implement the recommendation. | | | |

Acknowledgements

We are grateful to the following for sparing their time to support the preparation of this report:

- Martin Adams, Department of Energy and Climate Change, United Kingdom
- Anne Lund Andersen, Confederation of Danish Industry, Denmark
- Dimitris Athanasiou, Ministry of Reconstruction of Production, Environment and Energy, Greece
- Martina Berg, Swedish Energy Agency, Sweden
- Isabell Büschel, ENACE - Spanish Organisation of Energy Auditors and Certifiers, Spain
- Charles Buttigieg, Ministry for Energy and Health, Malta
- Keith Brierley, Environment Agency, United Kingdom
- Enrico Cagno, Politecnico di Milano, Italy
- Laurent Cadiou, Ministry of Ecology and Sustainable Development, France
- Cristina Cardoso, Directorate General of Energy and Geology, Portugal
- George Cassar, Malta Resources Authority, Malta
- Aneta Ciszewsk, Ministry of Economy, Poland
- Irena Dubravec, Environmental Protection and Energy Efficiency Fund, Croatia
- Martin Fry, Energy Services and Technology Association, United Kingdom
- Andrzej Guzowski, Ministry of Economy, Poland
- Benét Hermind, Danish Energy Agency, Denmark
- Zoltán Kapros, Hungarian Energy and Public Utility Regulatory, Hungary
- Tsvetomira Kulevska, Sustainable Energy Development Agency, Bulgaria
- Madis Laaniste, Ministry of Economic Affairs and Communications, Estonia
- Marc Lendermann, Federal Ministry for Economic Affairs and Energy, Germany
- Carl Maschietto, DG04 Energy, Belgium: Wallonia region
- Katerina Piripitsi, Ministry of Energy, Cyprus
- Mauro Mallone, Ministry of Economic Development, Italy
- Miroslav Marias, Ministry of Economy, Slovakia
- Joris Recko, Flemish Energy Agency, Belgium: Flanders region
- Ivan Šerić, National Energy Efficiency Authority, Croatia
- Dean Smolar, National Energy Efficiency Authority, Croatia
- Ivan Sproule, Sustainable Energy Authority Ireland, Ireland
- Giannis Thoma, Ministry of Energy, Cyprus
- Heikki Vaisanen, Finnish Energy Authority, Finland
- Martijn Verdonk, Ministry of Economic Affairs, Netherlands

Appendix

Resources

This appendix provides an overview of publicly available tools and guidelines related to energy audits, energy management systems or exchange mechanisms, that are offered free of charge by public institutions, research institutes and associations to companies. The overview includes interactive tools as well as printed guidelines. Presentations, leaflets and similar resources as well as resources specifically addressing households, buildings, the public sector or dealing with specific technologies or energy saving potentials in general are not part of this overview. Resources developed within European research and implementation projects are not part of this overview either; the reader is referred to the overview of research projects provided in the subsequent section of the appendix.

For each resource, the following information is provided:

- **Name:** The name of the tool or guideline. If the native language is not English, a translation of the name is provided and the name in the native language is given.
- **Year:** The year of the preparation of the resource.
- **Institution:** The institution that has issued the resource.
- **Country:** The country of origin of the document. Usually, the documents are written in the native language of the country. An indication of English translations is made where available.
- **Type:** An indication whether the document is mainly a print type document (also including pre-formatted checklists) or whether it is an interactive medium.
- **URL:** A resource location for finding further information on the project.
- **Description:** A short summary description of the resource.

Resources from within the EU-28

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|--------------|--|-------|-------|----------|------|
| Name: | Energy management & benchmarking (Energiemanagement & Benchmarking) | | | | |
| Focus: | Energy management | Type: | Print | Country: | AT |
| Institution: | Austrian Energy Agency | | | Year: | 2015 |
| URL: | http://www.energymanagement.at | | | | |
| Description: | An online learning platform for energy management according to ISO 50001 and energy benchmarking activities. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy audit according to EN 16247-1 - Recommendations for companies (Energieaudit nach EN 16247-1 - Tipps für Unternehmen) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | AT |
| Institution: | Austrian Chamber of Commerce | | | Year: | 2013 |
| URL: | https://www.wko.at/Content.Node/branchen/oe/TransportVerkehr/Spediteure/WIFI_Energieaudit_screen2014.pdf | | | | |
| Description: | A guideline for companies, energy auditors and consultants aiming at providing an overview of the content of an energy audit including the provision of best-practice examples. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Guideline for the initiative on energy efficiency networks (Praxis-Leitfaden zur Initiative Energieeffizienz-Netzwerke) | | | | |
| Focus: | Exchange mechanism | Type: | Print | Country: | DE |
| Institution: | Initiative energy efficiency networks | | | Year: | 2015 |
| URL: | http://bdi.eu/download_content/EnergieUndRohstoffe/Initiative_Energieeffizienz-Netzwerke.pdf | | | | |
| Description: | A guideline for the implementation of and participation in an energy efficiency network. | | | | |

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|--------------|---|-------|-------------|----------|------|
| Name: | Software to support a structured energy consultation according to DIN EN 16247-1 (Software zur Unterstützung einer strukturierten Energieberatung nach DIN EN 16247-1) | | | | |
| Focus: | Energy audit | Type: | Interactive | Country: | DE |
| Institution: | Energy Agency of Saxony | | | Year: | 2015 |
| URL: | http://www.saena.de/projekte/software-unterstuetzung-energieberatung-din-en-16247-1.html | | | | |
| Description: | A software based on the structure of a qualified energy consultation to deliver an energy audit report in accordance with DIN EN 16247-1. | | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Guideline for introducing an energy management system in SME (Anleitung zur Einführung eines Energiemanagementsystems in KMU) | | | |
| Focus: | Energy management | Type: | Print | Country: DE |
| Institution: | Energy Agency of Saxony | | | Year: 2015 |
| URL: | http://www.saena.de/download/Unternehmen/Handlungsleitfaden_Einfuehrung_EnMS_in_KMU.pdf | | | |
| Description: | A guidance document that aims to help small and medium-sized companies with the introduction of a basic energy management system. | | | |

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|--------------|---|-------|-------------|-------------|
| Name: | mod.EEM - Energy management in companies (mod.EEM - Energiemanagement in Unternehmen) | | | |
| Focus: | Energy management | Type: | Interactive | Country: DE |
| Institution: | Energy Agency Berlin | | | Year: 2015 |
| URL: | https://www.modeem.de/ | | | |
| Description: | A web-based platform to help companies with a step-by-step introduction of an energy management system. | | | |

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|--------------|--|-------|-------------|-------------|
| Name: | EMS.market overview (EMS.marktspiegel) | | | |
| Focus: | Energy management | Type: | Interactive | Country: DE |
| Institution: | EnergyAgency.NRW | | | Year: 2015 |
| URL: | http://www.energieagentur.nrw.de/tools/emsmarktspiegel/default.asp?site=ea | | | |
| Description: | A web platform providing an market overview of energy management system software with the possibility to define specific requirements to the software to obtain a list of available software packages. | | | |

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|--------------|---|-------|-------------|-------------|
| Name: | Quick check energy management (Quickcheck Energiemanagement) | | | |
| Focus: | Energy management | Type: | Interactive | Country: DE |
| Institution: | German Energy Agency | | | Year: 2015 |
| URL: | https://www.stromeffizienz.de/industrie-gewerbe/handlungsfelder/energiemanagement/quickcheck-energiemanagement.html | | | |
| Description: | A web-based screening tool that allows companies to do a quick evaluation of the state of their energy management activities. | | | |

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|--------------|---|-------|-------------|-------------|
| Name: | Web special energy management (Webspecial Energiemanagement) | | | |
| Focus: | Energy management | Type: | Interactive | Country: DE |
| Institution: | German Energy Agency | | | Year: 2015 |
| URL: | http://www.webspecial-energiemanagement.de/index.php?id=225 | | | |
| Description: | An online platform for companies to learn about energy management from different functional perspectives in a company. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Compliance of EMAS with the requirements of DIN EN ISO 50001 "Energy management systems" (Erfüllung der Anforderung der DIN EN ISO 50001 "Energiemanagementsysteme" durch EMAS) | | | |
| Focus: | Energy management | Type: | Print | Country: DE |
| Institution: | German EMAS Advisory Board | | Year: | 2012 |
| URL: | https://www.modeem.de/dms/377_brosch%C3%BCre---erf%C3%BCllung-der-anforderungen-der-din-en-iso-50001-%22energiemanagementsysteme%22-durch-emas.pdf | | | |
| Description: | A tabular comparison of the requirements of ISO 50001 and EMAS. | | | |

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|--------------|--|-------|-------|-------------|
| Name: | Energy Management Systems in Practice - ISO 50001: A Guide for Companies and Organisations (Energiemanagementsysteme in der Praxis - ISO 50001: Leitfaden für Unternehmen und Organisationen) | | | |
| Focus: | Energy management | Type: | Print | Country: DE |
| Institution: | Federal Ministry for the Environment, Nature Conservation and Nuclear Safety | | Year: | 2012 |
| URL: | https://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/3959.pdf http://www.umweltbundesamt.de/sites/default/files/medien/publikation/long/4013.pdf (English version) | | | |
| Description: | A guideline for assisting with the implementation of an energy management system according to ISO 50001. (Both available in English and German.) | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Energy management - Potentials for energy savings (Energiemanagement - Potenziale zur Energieeinsparung) | | | |
| Focus: | Energy management | Type: | Print | Country: DE |
| Institution: | EnergyAgency.NRW | | Year: | 2010 |
| URL: | https://broschueren.nordrheinwestfalendirekt.de/herunterladen/der/datei/qb-energiemanagement-final-pdf/von/energiemanagement-potenziale-zur-energieeinsparung/vom/energieagentur/1183 | | | |
| Description: | A short general guideline on the implementation of an energy management system. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Template for an energy action plan (Skabelon til energihandlingsplan) | | | |
| Focus: | Energy management | Type: | Print | Country: DK |
| Institution: | Danish Energy Agency | | Year: | 2014 |
| URL: | http://sparenergi.dk/sites/forbruger.dk/files/contents/publication/skabelon-til-energi-handlingsplan/skabelon-til-energi-handlingsplan_-_03-2014.doc | | | |
| Description: | A template document targeted at companies for elaborating an energy action plan. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Get started with energy management - Offices (Kom let i gang med Energiledelse - Kontor) | | | |
| Focus: | Energy management | Type: | Print | Country: DK |
| Institution: | Danish Energy Agency | | | Year: 2013 |
| URL: | http://spareenergi.dk/forbruger/materialer/energiledelse-kontor | | | |
| Description: | An guideline that defines the main elements of energy management in offices. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Get started with energy management - Small and medium-sized companies (Kom let i gang med Energiledelse - Små og mellemstore virksomheder) | | | |
| Focus: | Energy management | Type: | Print | Country: DK |
| Institution: | Danish Energy Agency | | | Year: 2013 |
| URL: | http://spareenergi.dk/forbruger/materialer/energiledelse-smaa-og-mellemstore-virksomheder | | | |
| Description: | An guideline that defines the main elements of energy management in small and medium-sized companies. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Get started with energy management - Hospitals (Kom let i gang med Energiledelse - Hospitaler) | | | |
| Focus: | Energy management | Type: | Print | Country: DK |
| Institution: | Danish Energy Agency | | | Year: 2013 |
| URL: | http://spareenergi.dk/sites/forbruger.dk/files/contents/publication/energiledelse-hospitaler/energiledelse-hospitaler_-_02-2014.pdf | | | |
| Description: | An guideline that defines the main elements of energy management in hospitals. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | On the road to energy management - Energy management light, a guideline on how to apply energy management or parts of it in small and medium-sized companies (På vej mod energiledelse - Energiledelse Light,- en vejledning i hvordan energiledelse eller dele deraf kan anvendes i små og mellemstore virksomheder) | | | |
| Focus: | Energy management | Type: | Print | Country: DK |
| Institution: | Danish Energy Agency | | | Year: 2010 |
| URL: | http://www.ens.dk/energiledelselight | | | |
| Description: | A guideline dealing with the core aspects of a structured energy management approach. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Energy management - Ideas for communication (Energiledelse - Ideer til kommunikation) | | | |
| Focus: | Energy management | Type: | Print | Country: DK |
| Institution: | Danish Energy Agency | | | Year: 2001 |
| URL: | http://www.ens.dk/info/publikationer/energiledelse-ideer-kommunikation | | | |
| Description: | A guideline about the communication on energy management within a company. | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Guide on Energy Audit and Recording (ΟΔΗΓΟΣ ΕΝΕΡΓΕΙΑΚΟΥ ΕΛΕΓΧΟΥ ΚΑΙ ΚΑΤΑΓΡΑΦΗΣ) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | EL |
| Institution: | Greek Center for Renewable Energy Sources and Saving | | | Year: | 2008 |
| URL: | http://www.cres.gr/kape/education/ODHGOS_ENERGEIAKOU_ELEGXOU.pdf | | | | |
| Description: | An energy audit guideline focusing on monitoring and processing audit result. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy audit guide (ΟΔΗΓΟΣ ΕΝΕΡΓΕΙΑΚΗΣ ΕΠΙΘΕΩΡΗΣΗΣ) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | EL |
| Institution: | Greek Center for Renewable Energy Sources and Saving | | | Year: | 2002 |
| URL: | http://www.cres.gr/kape/pdf/download/guide_a_gr.pdf http://www.cres.gr/kape/pdf/download/guide_b_gr.pdf http://www.cres.gr/kape/pdf/download/guide_c_gr.pdf | | | | |
| Description: | A set of guidelines dealing with energy audits in industry and buildings. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Guide for Energy Audits in Logistics Centers (Guía de Auditorías Energéticas en Centros Logísticos) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | ES |
| Institution: | Ministry of Economy and Finance of the Community in Madrid | | | Year: | 2012 |
| URL: | http://www.fenercom.com/pdf/publicaciones/Guia-de-Auditorias-en-Centros-Logisticos-fenercom-2013.pdf | | | | |
| Description: | An guideline for energy audits in logistic centres. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Guide Energy Audits for Supermarkets (Guía de Auditorías Energéticas en Supermercados) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | ES |
| Institution: | Ministry of Economy and Finance of the Community in Madrid | | | Year: | 2012 |
| URL: | http://www.fenercom.com/pdf/publicaciones/Guia-de-auditorias-energeticas-en-supermercados-fenercom-2013.pdf | | | | |
| Description: | An guideline for energy audits in super markets. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Guide for energy management of parks and golf courses (Guía de gestión energética en zonas verdes y campos de golf) | | | | |
| Focus: | Energy management | Type: | Print | Country: | ES |
| Institution: | Ministry of Economy and Finance of the Community in Madrid | | | Year: | 2012 |
| URL: | http://www.fenercom.com/pdf/publicaciones/Guia-de-gestion-energetica-en-zonas-verdes-y-campos-de-golf-fenercom-2012.pdf | | | | |
| Description: | An energy management guideline for parks and golf courses. | | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Guide for Energy Audits in Shopping Malls (Guía de Auditorías Energéticas en Centros Comerciales) | | | |
| Focus: | Energy audit | Type: | Print | Country: ES |
| Institution: | Ministry of Economy and Finance of the Community in Madrid | | Year: | 2010 |
| URL: | http://www.fenercom.com/pdf/publicaciones/Guia-de-Auditorias-Energeticas-en-Centros-Comerciales-fenercom-2010.pdf | | | |
| Description: | An guideline for energy audits in shopping malls. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Energy audits in livestock facilities. Part 1: Manual for conducting energy audits in livestock facilities; Part 2: Protocol for conducting energy audits in livestock installations and examples of audits in four installations (Auditorías energéticas en instalaciones ganaderas. Parte 1: Manual para la realización de auditorías energéticas en instalaciones ganaderas; Parte 2: Protocolo para la realización de auditorías energéticas en instalaciones ganaderas y ejemplos de auditorí) | | | |
| Focus: | Energy audit | Type: | Print | Country: ES |
| Institution: | Institute for Energy Diversification and Energy Saving (IDAE) | | Year: | 2010 |
| URL: | http://www.idae.es/uploads/documentos/documentos_10995_Auditorias_Inst_Ganaderas_A2010_3f4c1a6b.pdf http://www.idae.es/uploads/documentos/documentos_10995_Protocolo_Auditoria_Inst_Ganaderas_A2010_53670669.pdf | | | |
| Description: | Guidelines for energy audits in livestock facilities. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Guide for Energy Audits in Commercial Property (Guía de Auditorías Energéticas en Locales Comerciales) | | | |
| Focus: | Energy audit | Type: | Print | Country: ES |
| Institution: | Ministry of Economy and Finance of the Community in Madrid | | Year: | 2009 |
| URL: | http://www.fenercom.com/pdf/publicaciones/guia-de-auditorias-energeticas-en-locales-comerciales.pdf | | | |
| Description: | An energy audit guideline for commercial shops. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Guide for Energy Audits in restaurants of the Community of Madrid (Guía de auditorías energéticas en restaurantes de la Comunidad de Madrid) | | | |
| Focus: | Energy audit | Type: | Print | Country: ES |
| Institution: | Ministry of Economy and Finance of the Community in Madrid | | Year: | 2009 |
| URL: | http://www.fenercom.com/pdf/publicaciones/Guia-de-auditorias-energeticas-en-restaurantes-de-la-Comunidad-de-Madrid-2009-fenercom.pdf | | | |
| Description: | An energy audit guideline for restaurants. | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Procedures for energy audits in the industrial sector in the Community of Madrid (Procedimiento de auditorías energéticas en el sector industrial de la Comunidad de Madrid) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | ES |
| Institution: | Ministry of Economy and Finance of the Community in Madrid | | | Year: | 2009 |
| URL: | http://www.fenercom.com/pdf/publicaciones/guia-de-auditorias-energeticas-en-el-sector-industrial.pdf | | | | |
| Description: | An energy audit guideline addressing industrial facilities in the Madrid region. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy audit protocol for irrigation communities (Protócolo de Auditoría Energética en Comunidades de Regantes) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | ES |
| Institution: | Institute for Energy Diversification and Energy Saving (IDAE) | | | Year: | 2008 |
| URL: | http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_10995_Protocolo_auditoria_regantes_A2008_280bffb5.pdf | | | | |
| Description: | An energy audit guideline addressing irrigation. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Guide to Energy Management in the Hotel Industry (Guía de Gestión Energética en el Sector Hotelero) | | | | |
| Focus: | Energy management | Type: | Print | Country: | ES |
| Institution: | Ministry of Economy and Technological Innovation of the Community in Madrid | | | Year: | 2007 |
| URL: | http://www.fenercom.com/pdf/publicaciones/guia-de-gestion-energetica-en-el-sector-hoteler-fenercom.pdf | | | | |
| Description: | An energy management guideline for hotels. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy Management in Hotels (Gestión Energética en Hoteles) | | | | |
| Focus: | Energy management | Type: | Print | Country: | ES |
| Institution: | Ministry of Economy and Technological Innovation of the Community in Madrid | | | Year: | 2006 |
| URL: | http://www.fenercom.com/pdf/publicaciones/gestion-energetica-en-hoteles-fenercom.pdf | | | | |
| Description: | A guideline for energy management in hotels. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Handbook of Energy Audits (Manual de Auditorías Energéticas) | | | | |
| Focus: | Energy audit | Type: | Print | Country: | ES |
| Institution: | Ministry of Economy and Technological Innovation of the Community in Madrid | | | Year: | 2003 |
| URL: | http://www.fenercom.com/pdf/publicaciones/manual-de-auditorias-energeticas-2003-fenercom.pdf | | | | |
| Description: | A guidebook for the implementation of energy audits. | | | | |

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|--------------|--|-------|-------|-------------|
| Name: | Energy Efficiency System:2014 (EES+) (Energiatehokkuusjärjestelmä: 2014 (ETJ+)) | | | |
| Focus: | Energy management | Type: | Print | Country: FI |
| Institution: | Motiva Oy | Year: | 2015 | |
| URL: | http://www.motiva.fi/files/10070/Energiatehokkuusjarjestelma_ETJ_.pdf http://www.motiva.fi/files/9874/Energiatehokkuusjarjestelman_(ETJ_)_arviointikysymykset.doc | | | |
| Description: | A guidance document on the implementation of the Finnish Energy Efficiency System. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Energy Audit Guidelines (Energiakatselmustoiminn an yleisohjeet) | | | |
| Focus: | Energy audit | Type: | Print | Country: FI |
| Institution: | Finish Ministry of Employment and the Economy | Year: | 2013 | |
| URL: | http://www.motiva.fi/files/6952/Energiakatselmustoiminnan_yleisohje_2013.pdf | | | |
| Description: | A guidance document on the implementation of energy audits. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Energy management system (Système de management de l'énergie) | | | |
| Focus: | Energy management | Type: | Print | Country: FR |
| Institution: | Agence de l'Environnement et de la Maîtrise de l'Energie | Year: | 2015 | |
| URL: | http://www.ademe.fr/sites/default/files/assets/documents/systeme-management-energie-sme-entreprises-parlent-mieux-8402.pdf | | | |
| Description: | A best-practice document on the implementation of energy management systems based on practical experience. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Implementation of an energy management system according to ISO 50001 - Experiences from common action in Normandy (Mises en oeuvre d'un système de management de l'énergie selon l'ISO 50001 - Retours d'expérience de l'opération collective en Normandie) | | | |
| Focus: | Energy management | Type: | Print | Country: FR |
| Institution: | Agence de l'Environnement et de la Maîtrise de l'Energie | Year: | 2014 | |
| URL: | http://www.ademe.fr/sites/default/files/assets/documents/mises-en-oeuvre-systeme-management-energie-selon-iso50001-8122.pdf | | | |
| Description: | Practice-oriented guide for implementing an energy management system according to ISO 50001 dealing with common questions and best-practice collected from a collective implementation approach in Normandy. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Templates for planning and management | | | |
| Focus: | Energy management | Type: | Print | Country: IE |
| Institution: | Sustainable Energy Authority of Ireland | Year: | 2015 | |
| URL: | http://www.seai.ie/EnergyMap/Resources_tools/Template_Planning_Management_/Templates_for_planning_and_management.html | | | |
| Description: | A set of templates aiming at facilitating planning and management activities also related to energy management. | | | |

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|--------------|--|-------|-------------|----------|------|
| Name: | Energy MAP | | | | |
| Focus: | Energy management | Type: | Interactive | Country: | IE |
| Institution: | Sustainable Energy Authority of Ireland | | | Year: | 2015 |
| URL: | http://www.seai.ie/EnergyMap/About_Energy_Map/ | | | | |
| Description: | An webplatform that provides a step-by-step guidance to setting up a best practice action plan based on 20 steps covering different elements of energy management. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy Policy Samples | | | | |
| Focus: | Energy management | Type: | Print | Country: | IE |
| Institution: | Sustainable Energy Authority of Ireland | | | Year: | 2015 |
| URL: | http://www.seai.ie/EnergyMap/Resources_tools/Template_Energy_Use_Cost_Savings_/Energy_Policy_Samples/Energy_Policy_Samples.html | | | | |
| Description: | A selection of sample energy and environmental policies from different institutions that may serve as a basis for developing an own energy policy. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Technical Guideline - I.S. EN 16001:2009. Energy management systems – Requirements with guidance for use | | | | |
| Focus: | Energy management | Type: | Print | Country: | IE |
| Institution: | Sustainable Energy Ireland | | | Year: | 2009 |
| URL: | http://www.sei.ie/Your_Business/Energy_Agreements/IS393_Energy_Management_System/EN16001_Technical_Guideline.pdf | | | | |
| Description: | A guideline that deals with the technical stages and processes of an energy management system. It provides a set of possible approaches and methodologies for being compliant with the Irish energy management standard. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Internal Audit Guide - I.S. EN 16001:2009 Energy management systems – Requirements with guidance for use | | | | |
| Focus: | Energy audit | Type: | Print | Country: | IE |
| Institution: | Sustainable Energy Ireland | | | Year: | 2009 |
| URL: | http://www.sei.ie/Your_Business/Energy_Agreements/IS393_Energy_Management_System/EN16001_Internal_audit_guide.pdf | | | | |
| Description: | A guide for internal auditors dealing with energy management systems according to I.S. EN 16001. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Implementation Guide - I.S. EN 16001:2009 Energy management systems – Requirements with guidance for use | | | | |
| Focus: | Energy management | Type: | Print | Country: | IE |
| Institution: | Sustainable Energy Ireland | | | Year: | 2009 |
| URL: | http://www.sei.ie/Your_Business/Energy_Agreements/IS393_Energy_Management_System/EN16001_Implementation_guide.pdf | | | | |
| Description: | An implementation guide to assist companies with the implementation of an energy management system according to the requirements of the Management Standard I.S. EN 16001. | | | | |

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|--------------|---|-------|-------------|-------------|
| Name: | Selfscan for SME (Zelfscan voor KMO's) | | | |
| Focus: | Energy audit | Type: | Interactive | Country: NL |
| Institution: | Flemish Energy Agency | | | Year: 2015 |
| URL: | http://www.energiesparen.be/energiebeleid/voor-bedrijven/energiebesparing-bij-kmos | | | |
| Description: | A self-scan tool related to energy savings in SMEs. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Plan for the introduction of Energy Management - Project phases: Reference - Questions - Guidance (Plan van aanpak voor de invoering van Energiemanagement Projectfasen: Referentie - Vragen - Leidraad) | | | |
| Focus: | Energy management | Type: | Print | Country: NL |
| Institution: | Netherlands Enterprise Agency | | | Year: 2014 |
| URL: | http://www.rvo.nl/sites/default/files/2014/02/Plan_van_aanpak_invoering_Energie_management_februari_2014.pdf | | | |
| Description: | A guidance document on the implementation of an energy management system. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Referentie Energiezorg® with guidance - Systematic and continuous improvement of energy efficiency in industry and non-residential buildings (Referentie Energiezorg® met Leidraad - Systematische en voortdurende verbetering van de energie-efficiency in de industrie en utiliteitsbouw) | | | |
| Focus: | Energy management | Type: | Print | Country: NL |
| Institution: | NL Agency | | | Year: 2012 |
| URL: | http://www.rvo.nl/sites/default/files/2MJAP1226-Referentie_Energiezorg%20met%20Leidraad-juli2012_0.pdf | | | |
| Description: | An interpretation guideline for the Dutch Referentie Energizorg® approach on energy management. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Guide to energy management: Internal Audits & Management Review (Handreiking energiemanagement: Interne Audits & Management Review) | | | |
| Focus: | Energy management | Type: | Print | Country: NL |
| Institution: | NL Agency | | | Year: 2011 |
| URL: | http://www.rvo.nl/sites/default/files/bijlagen/2MJAP1167_Energiemanagement_Interne_Audits.pdf | | | |
| Description: | A guidance document on implementing an internal audit and a management review. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Guideline for energy audits in large companies - Introduction of energy audits (Vägledning för energikartläggning i stora företag - Inför energikartläggningen) | | | |
| Focus: | Energy audit | Type: | Print | Country: SE |
| Institution: | Swedish Energy Agency | | | Year: 2015 |
| URL: | https://energimyndigheten.a-w2m.se/FolderContents.mvc/Download?ResourceId=5505 | | | |
| Description: | A guidance document for large private and public organisations that describes how to provide an overarching description of energy usage. | | | |

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|--------------|--|-------|-------|-------------|
| Name: | Guideline for energy audits in large companies - For the private and public sector (Vägledning för energikartläggning i stora företag - För privat och offentlig sektor) | | | |
| Focus: | Energy audit | Type: | Print | Country: SE |
| Institution: | Swedish Energy Agency | | | Year: 2015 |
| URL: | https://energimyndigheten.a-w2m.se/FolderContents.mvc/Download?ResourceId=3054 | | | |
| Description: | A guideline for companies that allows them to find out whether they are subject to mandatory energy audits. | | | |

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|--------------|--|-------|-------------|-------------|
| Name: | Energy Management Light (Energiledning Light) | | | |
| Focus: | Energy management | Type: | Interactive | Country: SE |
| Institution: | Swedish Energy Agency | | | Year: 2015 |
| URL: | http://extra.swerea.se/enig_energiledninglight | | | |
| Description: | A web-based energy management tool specifically addressing the requirements of SMEs in the manufacturing industry which may serve as a starting point for a later introduction of ISO 50001. | | | |

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|--------------|--|-------|-------------|-------------|
| Name: | energiaktiv.se - Support for energy efficiency improvements (energiaktiv.se - Stöd i energieffektiviseringsarbetet) | | | |
| Focus: | Energy management | Type: | Interactive | Country: SE |
| Institution: | Swedish Energy Agency | | | Year: 2013 |
| URL: | http://www.energiaktiv.se/ | | | |
| Description: | A website with information on energy management based on a step-by-step approach with checklists for several areas of application. | | | |

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|--------------|--|-------|-------|-------------|
| Name: | Handbook for energy audits and analysis - Tips and advice from the Swedish Energy Agency (Handbok för kartläggning och analys av energianvändning - Tips och råd från Energimyndigheten) | | | |
| Focus: | Energy audit | Type: | Print | Country: SE |
| Institution: | Swedish Energy Agency | | | Year: 2004 |
| URL: | https://www.energimyndigheten.se/Global/F%C3%B6retag/kart.pdf | | | |
| Description: | A guideline for companies with the intent to implement energy audits. | | | |

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|--------------|--|-------|-------|-------------|
| Name: | Energy management - Dealing with energy-related issues in companies and organisations (EnergiLedning - Att hantera energirelaterade frågor i företag och organisationer) | | | |
| Focus: | Energy management | Type: | Print | Country: SE |
| Institution: | Swedish Energy Agency | | | Year: 2000 |
| URL: | https://energimyndigheten.a-w2m.se/FolderContents.mvc/Download?ResourceId=732 | | | |
| Description: | A guidance document on energy management activities in companies. | | | |

Resources from outside the EU-28

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|--------------|--|-------|-------|----------|------|
| Name: | Energy Review Guide | | | | |
| Focus: | Energy management | Type: | Print | Country: | - |
| Institution: | Institute for Industrial Productivity | | | Year: | 2014 |
| URL: | www.iipnetwork.org/EnergyReviewGuideline_En.pdf2 | | | | |
| Description: | A step-by-step guideline to assist organisations with the implementation of an energy review or plan as part of a formal energy management system. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy analysis toolkit | | | | |
| Focus: | Energy management | Type: | Print | Country: | - |
| Institution: | United Nations Industrial Development Organization | | | Year: | 2008 |
| URL: | http://www.unido.org/fileadmin/user_media/Services/Environmental_Management/CP_ToolKit_english/PR-Volume_04/PR-Volume_4.zip | | | | |
| Description: | A collection of various documents on energy analysis and management in the context of cleaner production. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy Smart Toolbox - Introducing Energy Management | | | | |
| Focus: | Energy management | Type: | Print | Country: | AU |
| Institution: | Australian Government Department of Industry and Science | | | Year: | 2014 |
| URL: | https://eex.govspace.gov.au/resource/energy-smart-toolbox-%e2%80%93-introducing-energy-management/ | | | | |
| Description: | A web platform with a collection of fact sheets that aim to clarify key terms related to energy management. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy Savings Toolbox | | | | |
| Focus: | Energy audit | Type: | Print | Country: | CA |
| Institution: | Natural Resources Canada | | | Year: | 2008 |
| URL: | https://www.nrcan.gc.ca/energy/efficiency/industry/cipec/5161 | | | | |
| Description: | An energy audit guideline and a collection of related tools. | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Energy Management Information Systems - Achieving Improved Energy Efficiency | | | | |
| Focus: | Energy management | Type: | Print | Country: | CA |
| Institution: | Office of Energy Efficiency of Natural Resources Canada | | | Year: | 2003 |
| URL: | http://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/oeef/pdf/publications/industrial/EMIS/EMIS_eng.pdf | | | | |
| Description: | A handbook which addresses all levels of management and operational staff and aims to provide a structured and practical understanding of an energy management information system. | | | | |

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|--------------|--|-------|-------|----------|------|
| Name: | Guidebook for ISO 50001 - Energy Management System (ISO 50001 - 能源管理體系 實施指南) | | | | |
| Focus: | Energy management | Type: | Print | Country: | CN |
| Institution: | The Hong Kong Electronic Industries Association | | | Year: | 2013 |
| URL: | http://www.hkeia.org/iso50001/eguidebook/ISO50001%20guide_ENG%2019Aug(Final).pdf http://www.hkeia.org/iso50001/guidebook/ISO50001%20guide_CHI%2019Aug(Final).pdf | | | | |
| Description: | A guidance document on the implementation of ISO 50001 and on practical experience with the standard. (Both available in English and Chinese.) | | | | |

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|--------------|---|-------|-------|----------|------|
| Name: | Guideline - Energy management in industry (Veileder - Energiledelse i Industrien) | | | | |
| Focus: | Energy management | Type: | Print | Country: | NO |
| Institution: | Enova SF | | | Year: | 2012 |
| URL: | http://www.enova.no/upload_images/E9C369B5C52A4340955BAC25A1B69F22.pdf | | | | |
| Description: | A simple guideline that provides an overview of the basic elements of energy management. | | | | |

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|--------------|---|-------|-------------|----------|------|
| Name: | Energy Tracking Tool | | | | |
| Focus: | Energy management | Type: | Interactive | Country: | US |
| Institution: | United States Environmental Protection Agency | | | Year: | 2015 |
| URL: | http://www.energystar.gov/buildings/tools-and-resources/energy-tracking-tool | | | | |
| Description: | An Excel-based tool that allows to track and manage energy usage as part of a follow-up of energy management goals. | | | | |

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|--------------|---|-------|-------------|----------|------|
| Name: | Strategic Energy Management Checklist | | | | |
| Focus: | Energy management | Type: | Interactive | Country: | US |
| Institution: | United States Department of Energy | | | Year: | 2015 |
| URL: | https://ecenter.ee.doe.gov/EM/SPM/Pages/SEM_checklist.aspx#tabs | | | | |
| Description: | A checklist for a high-level assessment of energy management activities. | | | | |

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|--------------|---|-------|-------------|----------|------|
| Name: | eGuide | | | | |
| Focus: | Energy management | Type: | Interactive | Country: | US |
| Institution: | United States Department of Energy | | | Year: | 2014 |
| URL: | https://ecenter.ee.doe.gov/_layouts/ecenter/ppc.eguide/home.aspx | | | | |
| Description: | A web-based step-by-step guidance for implementing an energy management programme customised to the actual level of experience of an organisation. The guide is based on a three level approach, addressing the foundations of organisational energy management on the first level, an ISO 50001 equivalent on the second level and a further enhanced approach on level three. | | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Energy Treasure Hunt Guide: Simple Steps to Finding Energy Savings | | | |
| Focus: | Energy audit | Type: | Print | Country: US |
| Institution: | United States Environmental Protection Agency | | | Year: 2014 |
| URL: | http://www.energystar.gov/buildings/tools-and-resources/energy-star-treasure-hunt-guide-simple-steps-finding-energy-savings | | | |
| Description: | A step-by-step guidance to engage employees in the identification of energy saving opportunities. | | | |

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|--------------|---|-------|-------------|-------------|
| Name: | DOE eGuide | | | |
| Focus: | Energy management | Type: | Interactive | Country: US |
| Institution: | United States Department of Energy | | | Year: 2014 |
| URL: | https://ecenter.ee.doe.gov/_layouts/ecenter/ppc.eguide/home.aspx | | | |
| Description: | A toolkit which aims to assist organisations in the establishment of an energy management system by a step-by-step approach via several levels of implementation. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | ENERGY STAR Guidelines for Energy Management | | | |
| Focus: | Energy management | Type: | Print | Country: US |
| Institution: | United States Environmental Protection Agency | | | Year: 2013 |
| URL: | http://www.energystar.gov/sites/default/files/buildings/tools/Guidelines%20for%20Energy%20Management%206_2013.pdf | | | |
| Description: | A step-by-step guideline on the implementation of energy management. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Small & Medium Manufacturers' Guide to Energy Management | | | |
| Focus: | Energy management | Type: | Print | Country: US |
| Institution: | United States Environmental Protection Agency | | | Year: 2013 |
| URL: | http://www.energystar.gov/buildings/tools-and-resources/small-and-medium-sized-manufacturers%E2%80%99-guide-energy-management | | | |
| Description: | A basic guideline on the basics of energy management targeted at SMEs. | | | |

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|--------------|---|-------|-------------|-------------|
| Name: | Facility Energy Management Assessment Matrix | | | |
| Focus: | Energy management | Type: | Interactive | Country: US |
| Institution: | United States Environmental Protection Agency | | | Year: 2013 |
| URL: | http://www.energystar.gov/ia/business/guidelines/Facility_Energy_Assessment_Matrix.xls | | | |
| Description: | A checklist for rating the status of energy management practices with regard to the Energy Star Energy Management Guidelines. | | | |

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|--------------|--|-------|-------------|-------------|
| Name: | eGuide Lite | | | |
| Focus: | Energy management | Type: | Interactive | Country: US |
| Institution: | United States Department of Energy | | | Year: 2011 |
| URL: | https://ecenter.ee.doe.gov/EM/SSPM/Pages/home.aspx | | | |
| Description: | A collection of guideline and template documents that shall help organisations to understand the basics of energy management by a learning-by-doing model. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Guiding Principles for Successfully Implementing Industrial Energy Assessment Recommendations | | | |
| Focus: | Energy audit | Type: | Print | Country: US |
| Institution: | United States Department of Energy | | Year: | 2011 |
| URL: | http://www.energy.gov/sites/prod/files/2014/02/f7/implementation_guidebook.pdf | | | |
| Description: | A guideline intended to help successfully implementing recommendations from an energy assessment. | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Industrial Energy Audit Guidebook: Guidelines for Conducting an Energy Audit in Industrial Facilities (工业能源审计指南: 在工业设施内进行能源审计的指南) | | | |
| Focus: | Energy audit | Type: | Print | Country: US |
| Institution: | Lawrence Berkeley National Laboratory | | Year: | 2010 |
| URL: | https://china.lbl.gov/publications/industrial-energy-audit-guidebook | | | |
| Description: | A guide book for energy auditors and engineers to realize an effective and well-structured energy audit. (Both available in English and Chinese.) | | | |

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|--------------|---|-------|-------|-------------|
| Name: | Teaming up to Save Energy - Protect Our Environment Through Energy Efficiency | | | |
| Focus: | Energy management | Type: | Print | Country: US |
| Institution: | United States Environmental Protection Agency | | Year: | 2005 |
| URL: | http://www.energystar.gov/ia/business/guidelines/continuous_improvement/teaming_up_to_save_energy.pdf | | | |
| Description: | A guideline which aims to help structuring, launching and maintaining an energy management team. | | | |

EU projects

This part of the report provides an overview of projects funded by the EU during the last decade within its energy-related research programmes, e.g. the Intelligent Energy Europe Programme. The projects have been selected based on their apparent relevance to energy audits, energy management systems and exchange mechanisms. As in the other parts of this report, only projects specifically addressing companies are included; projects dedicated to buildings, the public sector or private households are not covered. It should further be noted that the degree to which the projects address the three core topics of this report varies considerably. While some projects focus on audits for example, others only address these as part of a set of activities in a broader context. The more recent projects also tend to explicitly address standards such as ISO 50001 and EN 16247 while others are only loosely related to them or were completed before these standards were published.

The following information is listed for each project:

- **Name:** Short and long name of the project
- **Focus:** Information, whether the project is mainly related to energy audits, energy management or exchange mechanisms.
- **Duration:** The duration of the project in calendar years.
- **Participants:** The participating countries in the project. The country of the project coordinator is marked in bold.
- **URL:** A resource location for finding further information on the project.
- **Description:** A very short project overview which briefly outlines how the project is related to the core topics of this study.

Projects related to energy audits

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|---------------|--|-----------|-----------|
| Name: | tesla : Transferring Energy Save Laid on Agroindustry | | |
| Focus: | Energy audit | Duration: | 2013-2016 |
| Participants: | ES , FR, PT, IT | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/tesla http://www.teslaproject.org/ | | |
| Description: | The tesla project aims at extending best available practices for realising energy savings in the agro-food sector. Among others, the project is targeted at implementing 110 energy audits according to a methodology based on EN 16247:2012 in cooperatives of this sector. | | |

| | | | |
|---------------|--|-----------|-----------|
| Name: | IND-ECO : Industry alliance for reducing energy consumption and CO ₂ | | |
| Focus: | Energy audit | Duration: | 2012-2015 |
| Participants: | IT , BG, ES, RO, PT, UK | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/ind-eco http://www.ind-ecoefficiency.eu/ | | |
| Description: | The IND-ECO project addresses energy efficiency in leather and footwear production. One of its objectives consists in identifying potentials for energy efficiency improvements in the leather value chain and tanneries. 75 audits were carried out and specific requirements for energy audits in tanneries and footwear companies were developed. | | |

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|---------------|--|-----------|-----------|
| Name: | PIne : Promoting Industrial Energy Efficiency | | |
| Focus: | Energy audit | Duration: | 2012-2015 |
| Participants: | IT , AT, BG, CY, ES, SK, RO | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/pine http://www.pineaudit.eu | | |
| Description: | The PIne project aims at the improvement of energy efficiency in SMEs by developing a shared auditing scheme and by providing technological advice with the goal of capacity building in industry. 280 preliminary and 140 full audits in SMEs are carried out within the project. | | |

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| Name: | ERASME : EneRgy Audits in SMEs | | |
| Focus: | Energy audit | Duration: | 2012-2014 |
| Participants: | IT , PL, HR, CZ, AT, DE, HU | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/erasme http://www.erasme-project.eu/ | | |
| Description: | In the ERASME project, a novel two-steps approach for energy audits is developed and demonstrated in a network of SME associations and regional development agencies in seven regions of the EU with a total of 258 audit implemented and 102 energy auditors trained. | | |

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| Name: | Foundrybench: Foundry energy efficiency benchmarking | | |
| Focus: | Energy audit | Duration: | 2009-2011 |
| Participants: | FI, FR, DE, PL, ES, SE, UK | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/foundrybench | | |
| Description: | The Founrybench project deals with energy efficiency improvements in the metal casting sector. Next to creating a benchmarking tool, 17 energy audits in foundries are carried out. | | |

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| Name: | EINSTEIN: Expert system for an Intelligent Supply of Thermal Energy in Industry EINSTEIN II: Expert-system for an INtelligent Supply of Thermal Energy in INdustry and other large scale applications | | |
| Focus: | Energy audit | Duration: | 2007-2009; 2010-2012 |
| Participants: | AT, BE, CZ, IT, PL, SI, ES, IT; ES, AT, DE, SK, IE, LU, IT, FR, BE, BG | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/einstein-ii http://www.einstein-energy.net/ | | |
| Description: | The Einstein I & II projects deal with energy efficiency in thermal energy supply for large non-industrial users and industrial companies. In the projects, a toolkit for thermal energy auditings is developed. 72 energy audits are carried out using the methodology and the toolkit from the project. | | |

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| Name: | E-CHECK IN CRAFT SME: From Colleague to Colleague: Energy Checks in Small and Medium Craft Enterprises | | |
| Focus: | Energy audit | Duration: | 2005-2007 |
| Participants: | DE, BG, EL, IE, ES | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/e-check-craft-sme | | |
| Description: | The project's aim is to develop an easily usable, standardized tool for checking energy consumption in craft companies. Within the project, 180 persons are trained as corresponding "checkers" and more than 250 companies are audited accordingly. | | |

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| Name: | SteamUP: STEAm And Management Under Pressure | | |
| Focus: | Energy audits | Duration: | 2015-2018 |
| Participants: | NL, CZ, DE, ES, AT, IT, EL, DK | | |
| URL: | http://cordis.europa.eu/project/rcn/194629_en.html | | |
| Description: | The SteamUP project aims among others at realizing energy savings potentials in steam systems. Among others, an in-depth audit for steam systems is provided and implemented in 75 companies. | | |

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| Name: | Night Hawks: Reduction of idle losses by off production time visits | | |
| Focus: | Energy audits | Duration: | 2013-2015 |
| Participants: | SE , CY, DK, IT, LV, FR, UK, DE | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/night-hawks http://www.night-hawks.eu/ | | |
| Description: | The Night Hawks project deals with energy savings based on nightly walks through shopping centres, retails parks and shops to identify saving potentials there. In the project, at least 120 of these walks are implemented. | | |

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| Name: | SESEC: Sustainable Energy Saving for the European Clothing SET: Save Energy in Textile SMEs | | |
| Focus: | Energy audits | Duration: | 2012-2014; 2014-2015 |
| Participants: | BE , IT, BG, PT, RO, DE; BE , PT, RO, DE, IT, CZ, HU | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/sesec https://ec.europa.eu/energy/intelligent/projects/en/projects/set http://euratex.eu/pages/set | | |
| Description: | The SESEC project addresses energy efficiency in the clothing industry. Among others, approximately 50 companies are audited within the project. The SET project is an extension of the SESEC project with a stronger focus on tool development and information exchange rather than on audits. | | |

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| Name: | ENGINE: Energy Efficiency in Small and Medium-sized Enterprises | | |
| Focus: | Energy audits | Duration: | 2007-2010 |
| Participants: | DE , AT, IT, SE, UK | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/engine http://www.engine-sme.eu/ | | |
| Description: | The ENGINE project aims at the improvement of energy efficiency in SMEs of the automotive, metal processing, wood processing and food industry by providing training and advice to management and technical staff. Next to training activities, specific energy efficiency checks in 55 companies are part of the project. | | |

Projects related to energy management

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| Name: | STEEEP: Support and Training for an Excellent Energy Efficiency Performance | | |
| Focus: | Energy management | Duration: | 2014-2017 |
| Participants: | BE , IT, UK, AT, EE, ES, FR, HR, HU, LV | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/steeep http://www.steeep.eu/ | | |
| Description: | Within the STEEEP project, 630 SMEs from different sectors are provided with tailored training and guidance on energy management and practices to meet specific local requirements on energy efficiency. | | |

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| Name: | EMSPI : Energy Management Standardization in Printing Industry | | |
| Focus: | Energy management | Duration: | 2014-2015 |
| Participants: | ES , CZ, NL, DE, DK | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/emspi http://www.emspi.eu/ | | |
| Description: | The EMSPI project addresses the promotion of energy management systems based on EN16001/ISO 50001 in SMEs of the printing industry. Among others, a specific adaptation of the standard is developed and 100 energy management systems according to EN 16001/ISO 50001 are implemented in SMEs. | | |

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| Name: | EEMusic : The European Initiative for Upscaling Energy Efficiency in the Music Event Industry | | |
| Focus: | Energy management | Duration: | 2013-2016 |
| Participants: | DE , AT, UK, PT, BG, LV, MT | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/eemusic http://www.ee-music.eu/ | | |
| Description: | The EEMusic project addresses energy consumption of music festivals, concerts and clubbing events. In the project, a combination of tools and guidelines related to energy audits and management is provided to reduce energy consumption of such events. | | |

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| Name: | SPICE³ : Sectoral Platform in Chemicals for Energy Efficiency Excellence | | |
| Focus: | Energy management | Duration: | 2013-2016 |
| Participants: | BE , UK, NL, DE, IT, CZ, PL, FI, BG, SE, EL | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/spice3 http://www.spice3.eu/ | | |
| Description: | The SPICE ³ project provides a sectoral platform for the chemical industry and provides best practice, tools and facilitating information for ISO 50001 certification. | | |

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| Name: | EUREMplus : Boost Energy Efficiency in Manufacturing SMEs by Extending European Energy Manager Training and Network | | |
| Focus: | Energy management | Duration: | 2013-2015 |
| Participants: | DE , CY, AT, CZ, BG, HR, MK, PL, RO | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/euremplus http://eurem.net/ | | |
| Description: | The EUREMplus project is an extension of the European Energy Manager training programme EUREM. The programme aims to provide courses, self-learning, practical work and information exchange to energy managers especially to SMEs in the industrial sector | | |

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| Name: | GREENFOODS: Towards zero-fossil CO ₂ emission in the European food & beverage industry | | |
| Focus: | Energy management | Duration: | 2013-2015 |
| Participants: | AT , DE, PL, UK, ES | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/greenfoods http://www.green-foods.eu/ | | |
| Description: | The GREENFOODS project addresses energy efficiency in the food and beverage industry in SMEs. As part of the project, a sector specific training module on energy management and a series of 200 energy audits are carried out. | | |

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| Name: | Ecoinflow: Energy Control by Information Flow | | |
| Focus: | Energy management | Duration: | 2012-2015 |
| Participants: | NO , SE, IE | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/ecoinflow http://www.ecoinflow.com/ | | |
| Description: | The aim of the Ecoinflow project is to implement energy management systems in sawmills. Among others, an energy management system handbook for sawmills and a corresponding benchmarking tool are developed. 27 sawmills started with the implementation of the proposed system. | | |

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| Name: | CARE+ : Training Chemical SMEs In Responsible Use Of Energy | | |
| Focus: | Energy management | Duration: | 2008-2011 |
| Participants: | BE , BG, IT, PL, UK | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/care | | |
| Description: | The CARE+ project deals with energy efficiency in SMEs of the chemical industry. As part of the project, information on energy management systems and a set of tools is provided. | | |

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| Name: | eeei: European Energy Efficiency Improvement in the Graphic Media Industry | | |
| Focus: | Energy management | Duration: | 2007-2009 |
| Participants: | NL , CZ, DE, EL, HU, NL | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/eeei | | |
| Description: | The eeei project deals with energy efficiency improvements in SMEs of the graphic media industry. Within the project, a standard related to energy management is provided among other results. | | |

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| Name: | BESS: Benchmarking and Energy Management Schemes in SMEs ExBESS: Expanding the Benchmarking and Energy management Schemes in SMEs to more Member States and Candidate Countries | | |
| Focus: | Energy Management | Duration: | 2005-2007; 2007-2009 |
| Participants: | NL , AT, FI, EL, IE, LT, NO, SI, ES, SE; NL , BE, CZ, EL, IT, LV, NO, PL, RO, SK, PT | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/bess | | |
| Description: | The BESS projects address energy efficiency in SMEs from the food and drink industry. Among others, an e-learning system and an energy management implementation model are developed in the project. At least 55 companies from the food and drink industry test the system. The ExBESS Project is an extension of the BESS project to other countries and sectors. | | |

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| Name: | EMS-TEXTILE: Promotion of Energy Management Practices in the Textile Industries of Greece, Portugal and Spain | | |
| Focus: | Energy management | Duration: | 2005-2007 |
| Participants: | GR , BG, PT, ES | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/ems-textile | | |
| Description: | Within the EMS-TEXTILE project, the promotion of energy management practices in the textile industries is addressed. Among others, an energy management guideline and an energy audit tool are developed in the project. | | |

Projects related to exchange mechanisms

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| Name: | GoECO: Development and Implementation of Integrated Energy Concepts in Business Parks | | |
| Focus: | Exchange mechanism | Duration: | 2013-2016 |
| Participants: | DE , CZ, FR, LV, SK, SI, PL, SE | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/go-eco http://go-eco.info/ | | |
| Description: | The GoECO project addresses energy efficiency in business parks, especially in SMEs located there. Within the project, a new approach for cooperation between SMEs in business parks on energy matters is developed. | | |

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| Name: | CA EED: Concerted Action on the Energy Efficiency Directive | | |
| Focus: | Exchange mechanism | Duration: | 2011-2016 |
| Participants: | NL (all EU-28) | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/ca-eed http://www.ca-eed.eu/ | | |
| Description: | The CA EED project concerning the Energy Efficiency Directive is a successor of the corresponding action for the ESD. One of its eight core topics also addresses energy audits. | | |

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| Name: | EmPower: EmPowerment of SME to Network for Intelligent Energy | | |
| Focus: | Exchange mechanism | Duration: | 2010-2013 |
| Participants: | DE , EL, ES, EE | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/empower http://www.empower-eu.com/ | | |
| Description: | The objective of the EmPower project is to promote the use of intelligent energy technologies. To achieve this aim, networking activities and innovations are promoted and technological transfer between partner regions is enhanced. | | |

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| Name: | CA ESD: Concerted Action on the Energy Services Directive | | |
| Focus: | Exchange mechanism | Duration: | 2008-2011 |
| Participants: | NL (all EU-28) | | |
| URL: | https://ec.europa.eu/energy/intelligent/projects/en/projects/ca-esd http://www.esd-ca.eu/ | | |
| Description: | The CA ESD project aims at supporting the European Member States in the implementation of the Energy Service Directive. One of the five core themes is related to auditing, metering and billing as part of the ESD. | | |