



POLICY GUIDELINES
by the Energy Community Secretariat
on Energy Audits

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1. Purpose

The Energy Community has adapted and adopted the Energy Efficiency Directive (EED; Directive 2012/27/EU) by the Ministerial Council Decision 2015/08/MC-EnC, with the deadline for transposition and implementation on 30 September 2017.

In its Article 8, the Energy Efficiency Directive addresses the requirements and promotion of energy audits and energy management systems.

2. Policy Guidelines

2.1. Large enterprises shall undertake an energy audit every four years

More specifically, it requires the Energy Community Contracting Parties to ensure and promote 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). Whilst large enterprises are required to be subject to an energy audit by 5 November 2018 and at least every four years thereafter, SMEs should be encouraged to undertake energy audits and implement the resulting recommendations.

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Policy Guidelines on Energy Audits

1. Introduction

Energy efficiency improvement is one of the most cost-effective ways to ensure the security of energy supply, reduce energy-related emissions, assure affordable energy bills and improve economic competitiveness.

The Energy Community has adapted and adopted the Energy Efficiency Directive (EED; Directive 2012/27/EU) by the Ministerial Council Decision 2015/08/MC-EnC, with the deadline for transposition and implementation on 30 September 2017.

The EED sets up the common framework of measures across the Contracting Parties to ensure the achievement of the Energy Community's 20% headline target on energy efficiency by 2020, and to encourage further energy efficiency improvements beyond this date. It aims to remove market barriers, and promotes a more efficient use of energy in supply and demand side applications.

The EED covers a large variety measures to achieve these aims. In its Article 8, it sets a legal obligation, but also a promotion of energy audits and energy management systems. More specifically, it requires the Energy Community Contracting Parties to ensure and promote the use of high quality, cost-effective energy audits and energy management systems to all final customers. This is applicable to both large as well as small and medium sized enterprises (SMEs). Whilst large enterprises are required to be subject to an energy audit by 5 November 2018 and at least every four years thereafter, SMEs should be encouraged to undertake energy audits and implement the resulting recommendations.

2. Legal requirements

Definition: An 'energy audit' means a systematic procedure with the purpose of obtaining adequate knowledge of the 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 saving opportunities, and reporting the findings; (see corresponding definition in Article 2(25)).

Article 8 of Directive 2012/27/EU requires the Contracting Parties to comply with the following main obligations:

- a) *Promote the availability of high quality and cost-effective energy audits to all final customers, fulfilling minimum criteria based on Annex VI and carried out by qualified and/or accredited experts or supervised by independent authorities;*
- b) *Ensure mandatory and regular audits for large enterprises fulfilling minimum criteria based on Annex VI and carried out by qualified and/or accredited experts or supervised by independent authorities;*
- c) *Establish transparent and non-discriminatory minimum criteria for energy audits, based on Annex VI of the Directive;*

- d) *Establish in national legislation requirements for energy auditors, and for supervision by national authorities,*
- e) *Ensure the development of programmes to encourage small and medium enterprises to undergo energy audits and to implement the recommendations from these audits; and*
- f) *Ensure the development of programmes to raise awareness among households about the benefits of energy audits.*

The Article gives scope for the provision of incentives for the implementation of recommended measures.

Nevertheless, in cases where companies are implementing a broader environmental audit that considers also electricity storage possibilities, connection to district heating and cooling networks or potential for demand response in industries and commercial buildings, then these may not have an energy audit. A private or public service, e.g. a city public transport system, may also be subject to an energy audit that results in the identification of cost-effective energy saving opportunities.

Moreover, in companies that have implemented an energy management system that usually requires them to carry out detailed energy review processes, which also result in the systematic identification and reporting of energy saving opportunities, these are also be exempted from carrying out an energy audit. This may also be the case for enterprises implementing environmental management systems.

Article 8(1) and Article 8(4) of the Directive establish the two main obligations for Contracting Parties to promote the availability of energy audits and to ensure that large enterprises carry out regular energy audits.

In the Energy Services Directive, in Article 8, “established that Contracting Parties must ensure, where they deem it necessary, the availability of appropriate qualification, accreditation and/or certification schemes for the providers of energy audits”. In the EED, additional provisions of Article 8, Article 16 of the EED “on the availability of qualification, accreditation and certification schemes establishes that where a Contracting Party considers that the national level of technical competence, objectivity and reliability is insufficient, the Contracting Party must ensure that, by 31 December 2017, certification and/or accreditation schemes and/or equivalent qualification schemes, including, where necessary, suitable training programmes, are available for the providers of energy audits”.

3. Implementation and best practices

The European Commission’s Directorate General for Energy prepared a Guidance Note on the Energy Efficiency Directive, Article 8 Energy Audits and Energy Management Systems, in November 2013, and later in 2019, an update of ‘Common Guidelines and recommendations to improve the consistency of the implementation of certain aspects of Article 8 and Annex VI of the Energy Efficiency Directive’.

These are expected to bring more clarity and a common understanding of the provisions of Article 8 and Annex VI, regarding¹:

- A positive definition for large enterprises.

¹ These clarifications were requested by EU MS at the Concerted Action on Energy Efficiency Directive meeting 2018.

- Audit methodologies, including sampling and clustering approaches.
- Options for using a de-minimis threshold.
- The idea of setting a threshold, to help identify those sites where it would be economically viable to undertake audits.
- Approach to leased assets: How to deal with situations where an enterprise consumes energy at a site, but does not have final responsibility for a building e.g. rented offices etc.
- Interactions between energy audits and energy performance certification for buildings.

3.1 Challenges in the implementation of Article 8

The large companies in the Energy Community Contracting Parties were obliged to produce the first mandatory audit by 5 November 2018. To date, there is not enough data to be able to assess the level of implementation of this provision, and hence most of the information is based on the EU Member States' implementation.

During the first period of implementation of energy audits in the EU, that was due by 31 December 2015, a significant number of issues that needed further clarifications, linked to the requirements posed by Article 8 and Annex VI, appeared.

According to Annex VI, energy audits must respect the following principles:

- a. *The principle of audit **cost-effectiveness** sets the expectation that the value of the energy audits exceeds the costs of undertaking them.*
- b. *The principle of **representativeness** sets the expectation that audit results are applicable not just for the energy use examined in detail by the audit but more widely across the enterprise (across its sites and activities).*
- c. *The principle of **proportionality** sets the expectation that the regulatory obligation placed on enterprises is reasonable in relation to the overall objective of the policy, which is to encourage energy saving.*

The updated Guidelines illustrate practical methodologies to implement the principles of costeffectiveness, proportionality and representativeness, and provide recommendations.

When implementing Article 8, one of the main stumbling blocks for the national authorities, was:

- *Who is obliged to undertake an energy audit? - Definition of a large enterprise (non – SME)*

According to a survey undertaken by the Concerted Action on the Energy Efficiency Directive, "many EU Member States (approx.56%) still find the definition of a non – SME an issue. The use of the EED's definition of SMEs to define the target group of non-SMEs that are obliged to have an energy audit every 4 years is also cumbersome for many EU Member States. This mainly relates to the treatment of multinational companies with multiple sites in various countries".

It is even more complicated for the Energy Community Contracting Parties that are not using in general the EU definition of SMEs.

The SME definition is defined in Article 1.26: '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; 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.

Enterprises belonging to large international company groups may be small in one specific country, with a minimal energy use. At the local country level they could be considered SMEs.

When applying the principle of cost-effectiveness to these enterprises, having an audit complying with Article 8 may be uneconomical - the identified savings may not even cover the cost of the audit. Moreover, they will be faced with an increased administrative burden and an additional burden will be put on countries' authorities to identify these enterprises and assure compliance. However, the EED requires small enterprises that are parts of multi-nationals to be audited.

A large majority of Contracting Parties does not use the EU definition of SMEs, but national definitions, therefore the staff number and turnover thresholds may vary significantly from Contracting Party to Contracting Party. Because of this, the Secretariat will make further investigations into how the SMEs are defined in the Contracting Parties and make some policy recommendations, if needed.

Another matter of confusion may arise from the definition of an "enterprise". The first European Commission Guidance Note on Article 8, in 2013, stated that:

To be considered as an SME, "an organisation must first fall within the definition of an 'enterprise'". An enterprise is "any entity engaged in an economic activity, irrespective of its legal form, including, in particular, self-employed persons and family businesses engaged in craft or other activities, and partnerships or associations regularly engaged in an economic activity" (European Commission, 2003). Any activity whereby goods or services are offered on a given market is an economic activity (European Commission, 2013).²

This then raises the question if companies in the public sector are "enterprises", and therefore under the obligation to have an energy audit if staff or turnover requirements are met.

The Secretariat will investigate what is the definition of an "enterprise" in the Contracting Parties and check if this may constitute a barrier in the implementation of Article 8.

From the EU Member States' experience with implementing Article 8 in the first round of mandatory energy audits, some good practises included:

- Creating a national register of large enterprises to consistently and efficiently determine and record company compliance requirements.
- Provision of easily accessible information to companies: So far, some EU Member States, such as Austria, Germany, Hungary and Italy, have provided well-structured Frequently Asked Questions (FAQ) or interpretation guidelines that are more easily accessible to companies than the actual national transposition laws.

The research undertaken by DNV GL and Ricardo in Q3 2017, presented the approach of EU Member States to defining the non SMEs as shown in Table 2.1 Member States' non SME definition status of the Report https://ec.europa.eu/energy/sites/ener/files/final_report_-_development_of_guidelines_and_recommendations_on_the_impl.pdf

▪ *Communicating the obligation*

Once the Contracting Party identified the companies that are subject to the Article 8 obligation, the National Authority (an Agency, or a ministry department) would need to communicate this

² Ricardo Energy and Environment: Development of recommendations on implementation of certain aspects of Article 8 and Annex VI of the Energy Efficiency Directive - Final Report, 2018

obligation to the respective companies. EU Member States have adopted various ways of communication, such as:

- a. A written announcement, letter directly to each company that falls into the category of non – SME that they have to perform energy audits, or through sector federations that will communicate to their associates their obligations.
- b. A company self-assessment (the Irish model) through a website tool hosted by the Sustainable Energy Authority of Ireland, where companies need to fill in an online questionnaire <https://www.surveymonkey.com/r/SEAIAuditSurvey>.
- c. Requirement for all enterprises to confirm their qualification status and report that they undertook the qualification assessment. Confirming the information they used for this purpose allows the national regulator to confirm the correctness of the qualification assessment. This can be implemented via an online qualification form to facilitate this exercise. (Example: UK).
- d. Using different communication and awareness raising channels, such as associations of energy auditors or of large industrial companies, sector associations, etc.

▪ *Cost-effectiveness of energy audits*

The requirements in Annex VI of the EED set out that “energy audits must be proportionate and sufficiently representative”, without providing details on what this means in practice.

Having this in mind, several EU Member States have included in their national legislation some flexibility to implement the obligations, such as a “de minimis” energy consumption that must be covered by audits, as well as clustering/sampling approaches, small site thresholds and other cost-benefit measures.

▪ *Clustering and sampling*

In order to achieve cost-effectiveness, companies may use **clustering**, or grouping, of similar activity types together. This approach can be more cost-effective in case of identification of energy efficiency measures that can be applied to more than one activity that uses energy in similar technologies, undertaken by a company with different sites, or is part of a wider group of companies.

A Report prepared for the European Commission concluded that by “using **sampling**, an energy audit may include a statistically significant and representative number of detailed audits of the sampled assets/operations (including or excluding a visit to the asset) and a high-level overview of all the assets or the full scope of the operation”³.

▪ *De minimis*

The requirements in Annex VI of the EED mention that the energy audits need to be **proportionate and sufficiently representative**. What does this mean in practice?

In order to be able to address this, several EU Member States have included in their national legislation a specific “de minimis” energy consumption that needs to be covered by the audits.

In other words, the audit of large enterprises does not need to take into account energy consumption that may be not “material” or may be too difficult and costly to quantify/ measure.

³ Development of Recommendations on the implementation of certain aspects of Article 8 and Annex VI of the Energy Efficiency Directive, Ricardo Energy and Environment, 5 October 2018

It may also allow for the exclusion of certain operations where it is known that there is minimal opportunity to reduce energy consumption and costs.

In the United Kingdom, the approach to “de minimis” energy consumption flexibility is that companies can exclude up to 10% of their total energy consumption from any audit or alternative compliance measures. This can be applied on:

- a group basis – for example excluding the consumption of one or more undertakings
- a site basis – for example excluding the consumption of a particular site or number of sites
- an asset/activity basis – for example excluding the consumption of an asset or activity, or a defined list of assets or activities
- a fuel basis – for example excluding consumption associated with the use of a particular fuel or fuels.

In EU Member States, the percentage of energy consumption of an enterprise that needs to be covered by an energy audit is 80% - 90% on average.

3.2 *What is the difference between energy audits and buildings certification?*

Article 8(1) and 8(4) of the EED requires “large enterprises to perform an energy audit every 4 years, which is based on measured data on energy consumption and load profiles for electricity and should examine - where applicable - industrial operations or installations, including transportation, and allow detailed and validated calculations to provide information on potential savings”.

Article 11 of the EPBD imposes an obligation on the Contracting Parties to establish a system of certification of the energy performance of buildings. This makes it possible for owners or tenants of a building to assess its energy performance and compare it with others.

Therefore, energy performance certification in accordance with Article 11 of the EPBD and inspections in accordance with its Articles 14 and/or 15 cannot automatically be regarded as equivalent to energy audits under Article 8 of the EED⁴.

Nevertheless, it is possible that in specific cases (for instance when auditing office buildings of a large enterprise) certification and/or inspections under the EPBD in a given Contracting Party may fulfil the requirements of Article 8 and Annex VI of the EED.

3.3 *Quality of energy audits*

Under Article 8(1) of the EED, the Contracting Parties must promote to all final customers the availability 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 best way to ensure a good audit quality is to use qualified or accredited experts.

3.4 *Qualification or accreditation of experts*

The Commission’s staff working document “Guidance note on Directive 2012/27/EU, published on 6.11.2013, explains the difference between “accreditation” and “qualification (see below):

Energy audits must be carried out by either “qualified” or “accredited” experts. Accreditation is a public authority activity that ensures the continuous control of the technical competence of

⁴ Guidance note on Directive 2012/27/EU 6.11.2013.

conformity assessment bodies. It ensures that audits carried out by experts meet the requirements of Annex VI of the EED. While there is a possibility to have qualified experts, it may be more difficult to demonstrate their competence through qualification schemes rather than accreditation. Regulation 765/20085 provides the EU definition of "accreditation". It should be noted, however, that accreditation according to Regulation 765/2008⁵ is normally provided to legal rather than natural persons. Qualification should therefore rather apply to those cases where an individual aims to become active as an expert.

The Directive allows for the possibility of using in-house experts or energy auditors to carry out energy audits; nevertheless, the same rules apply in this case as in the case of external auditors "the audits shall be carried out in an independent and cost-effective manner by qualified and/or accredited experts, and be subject to supervision by independent authorities under national legislation".

Through the assessment of the first round of mandatory Energy Audits in the EU, a clear conclusion was drawn, as follows: "Auditors' qualifications and their knowledge is key, as they need to identify energy improvement opportunities in process industries". In the first round of energy audits assessed by the Joint Research Centre at the request of the European Commission, "auditors were raising energy improvement opportunities in the utilities area but not in the process itself. As a result, the mandatory audits may not appear to be cost-effective after a few compliance periods have elapsed. To address this, auditors specialising in the company's sector should be undertaking audits to be able to identify process related energy savings. A sector level auditor qualification could support this".

4. Contents, level of detail of energy audits

Annex VI of the EED has established the minimum criteria for energy audits; these act like a set of guidelines for Contracting Parties to follow while developing a legal framework on energy audits, as well as for organizations that need to undergo an energy audit.

A survey⁶ was conducted in different EU Member States on the thoroughness and level of detail of energy audits for which state support is provided. Two main trends in the level of detail put on energy audits were observed:

- A very detailed audit, including a 3-year energy consumption analysis, the building envelope and thoroughly evaluated HVAC installations (e.g. Estonia or Czech Republic). After this, savings are divided into different packages according to the level of investment and planned measures into low, medium and highly capital intensive solutions.
- Non – extensive audits as a first step (Austria and Bulgaria).

In Austria, a rough audit is financed, while in Bulgaria energy audits are partial and relate to specific activities and measures that are previously planned to be implemented.

⁵ Regulation (EC) No. 765/2008 defines 'accreditation' as 'an attestation by a national accreditation body that a conformity assessment body meets the requirements set by harmonised standards.

⁶ Survey of energy audits and energy management systems in the Member States, JRC 2017.

In Germany, there are two types of thoroughness of audits, depending of the programme. While in the BAFA Vor-Ort Beratung, an on-site inspection is mandatory and the reports must contain recommendations and quantifications on measures to be taken, for the KfW Energieberatung Mittelstand, a two-phase audit is suggested. After an initial audit with less elements being audited, a more detailed audit is undertaken.

In Sweden, there are two different types of quality control for the two different programmes in place.

5. Monitoring to ensure implementation and provide quality control

The Contracting Parties have to 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 carried out (Article 8(1)). The national scheme for checking the quality of in-house experts or energy auditors can be the same as for external ones. Where energy audits are carried out by in-house experts, the necessary level of independence would require these experts not to be directly engaged in the activity audited (recital 25).

In Contracting Parties with mandatory energy audit programmes in place, the information from energy audits shall be gathered by central or regional governmental bodies that process the information from the audits.

Based on the EU experience, the quality control can be made through analysis of summaries of energy audits and random checks by central bodies. In case there are funding programmes to promote energy audits, in order to get access to the funding, the findings of the audits must be reported to the body that attributes such funding.

Normally, in these cases, all audits are systematically evaluated. However, it was possible to find cases of EU Member States with voluntary programmes in place that do not perform any quality checks of the audits and leave to the auditors the onus to deliver high quality audits. This normally happens in the case of countries that promote specifically Energy Management Systems, and the quality control is assumed to be made through the certification bodies.

6. Standardising the energy audits: Handbooks, energy audit report templates and training

In order to save costs and ensure some quality consistence throughout the country, some authorities have developed an Energy Audit Handbook as a comprehensive best practice tool, e.g. the Sustainable Energy Authority of Ireland handbook <https://www.seai.ie/business-andpublic-sector/large-business/energy-auditing/>.

Others, like the Austrian Energy Agency, have developed a series of specific advanced training courses on motor driven systems, steam, cooling, ventilation and AC systems or lighting systems for auditors of large industrial companies. These trainings are aimed at experienced energy auditors who can also get training on guidelines to conduct special audits, auditing according to the EN 16247 and are familiarized with the templates for audit reports.

In Germany, energy auditors participating in a promotion programme for energy audits for SMEs have a standard report template in which they are required to fill a detailed list of recommended measures.

7. Exemptions

Article 8(6) provides exemptions to the obligation for large enterprises to carry out regular energy audits when those enterprises are implementing an energy or environmental management system 'certified by an independent body according to the relevant European or International Standards'.

This exemption is based on the fact that an energy management system normally leads to the identification of opportunities for energy saving, which is also the scope of energy audits. For these reasons, enterprises that are implementing an energy or environmental management system – certified by an independent body according to the relevant European and International Standards – are considered to satisfy the energy audit requirement of Article 8(4) in terms of results and are therefore exempted from this obligation.

8. International standards for energy audits

Annex VI provides minimum criteria for energy audits, but the Directive does not contain much information about required or recommended audit processes, types of data needed or levels of detail in audit reports.

Although the EED does not refer to any specific standard with respect to implementation of Article 8, the use of international standards for energy audits can provide a consistent approach and ensure that audits undertaken are of a high quality.

The European Standards of the EN 16247 series related to energy audits include:

- The first standard in the series ([EN 16247-1](#)), specifying the general requirements, common methodology and deliverables for energy audits, was adopted by CEN and CENELEC in June 2012.
- Three further standards, addressing the specific requirements, methodology and deliverables of energy audits in relation to buildings ([EN 16247-2](#)), processes ([EN 16247-3](#)) and transport ([EN 16247-4](#)), were adopted by CEN and CENELEC in May 2014.
- The fifth and final standards in the series ([EN 16247-5](#)), which relates to the competences of energy auditors and will support the development of national qualification schemes for energy auditors, was approved by CEN and CENELEC in March 2015. All of the European Standards in the EN 16247 series are published and can be found on the [CEN website](#) and the [CENELEC website](#).

Article 8 may also be implemented by having an Energy Management System, in line with the European/International Standard [EN ISO 50001:2011](#), or an Environmental Management System in line with the European/International Standard [EN ISO 14001:2004](#).

9. Implementing recommendations from energy audits

There are some principle barriers, which prevent an audit recommendations from being implemented, including financing. The Directive does not impose that the recommendations from an energy audit are implemented, but leaves this to the discretion of the audited companies. In the EU it appeared that "most authorities would have difficulties following up on the measures

that are to be implemented in the absence of a contractual obligation, or in case of financial support programmes”.

A survey of EU Member States conducted by the Joint Research Center indicated that in most cases the authorities (over 60%) were unaware of the implementation rate of the measures identified in the energy audit.

One of the measures which would increase the implementation of the recommended efficiency measures is the **compulsory implementation of the measures with payback time under a certain threshold**, as is the case already in some EU Member States and recently come into force in the Netherlands.

Another promotion method of implementing energy efficiency measures identified in the energy audits is through **dedicated awareness campaigns highlighting additional benefits** of energy audits such as extra financial benefits of energy savings, competitiveness increase, etc.

10. Guidelines

Based on the EU Member States' experience in implementing Article 8, the Energy Community Secretariat recommends to the Contracting Parties, as follows:

- An authority (i.e. Energy Efficiency Agency) to overview the process, monitor the compliance of the obligated companies, ensure quality control, promote the benefits of implementing energy audits recommendations, raise awareness of SMEs on availability of support programmes to undergo voluntarily energy audits should be assigned.
- A transparent mechanism to identify the companies that are obliged to undertake an energy audit or introduce an environmental or energy management system should be put in place. This obligation based on Article 8 should be communicated to the identified companies by the authority in charge of monitoring.
- Flexibility opportunities (clustering and sampling, de minimis threshold) in order to make energy audits cost-effective and reduce the administrative burden should be introduced in the national law.
- Programmes for energy auditors' training, accreditation or certification should be developed.
- Methodologies for energy audits, data collection and audit reports should be standardised to reduce costs and administrative burden.
- The European Standards of the EN 16247 series related to energy audits should be used for conducting energy audits.
- Special programmes to support SMEs to undertake energy audits should be developed.
- Implementation of energy savings measures identified by energy audits should be supported by authorities, especially through incentives or voluntary agreements.