II REACHING THE TARGETS

Part II details the main elements of the EED, providing a background for each of the subject areas, the requirements of the EED and recommendations for effective implementation and monitoring. Because many subject areas are covered by more than one article, each is treated separately here. Part II starts by reviewing Energy Efficiency Obligations, then follows with the public sector and energy audits, and ends with a discussion of supply side efficiency and demand response.

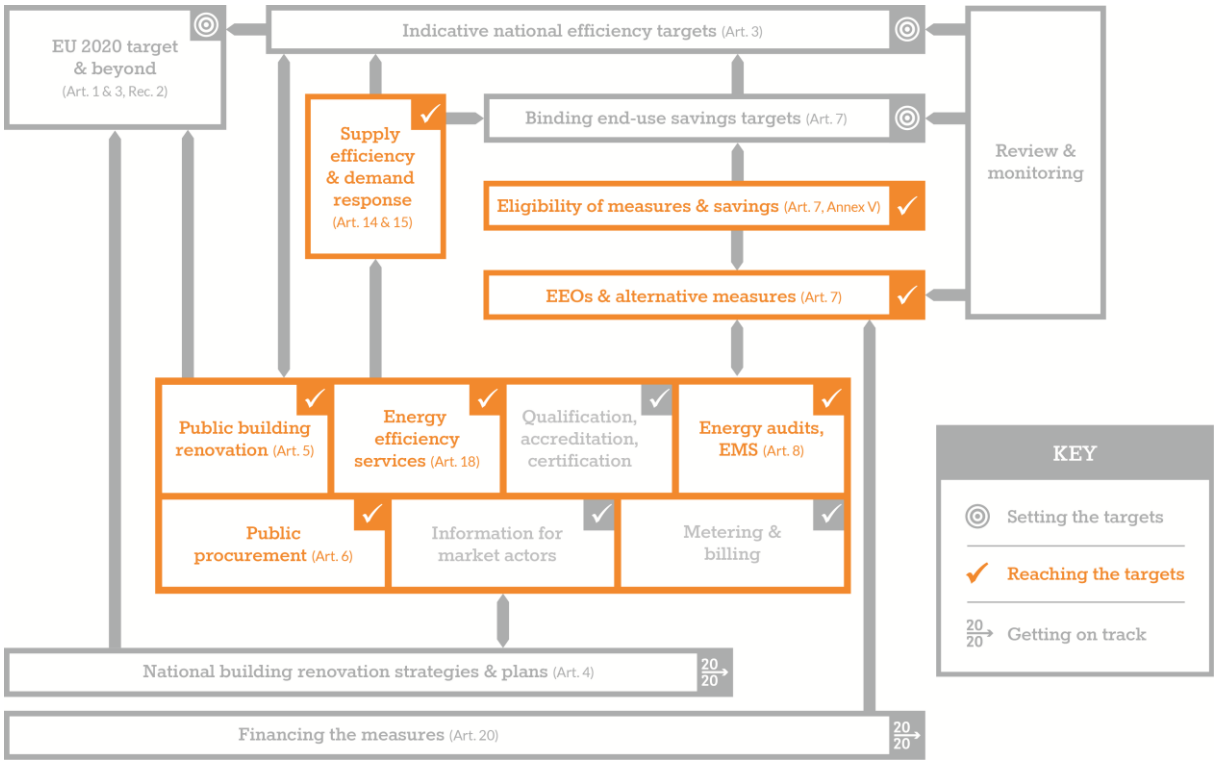

Figure 16 – Guidebook Overview Map: Reaching targets and objectives

II.5 Energy audits (Article 8)

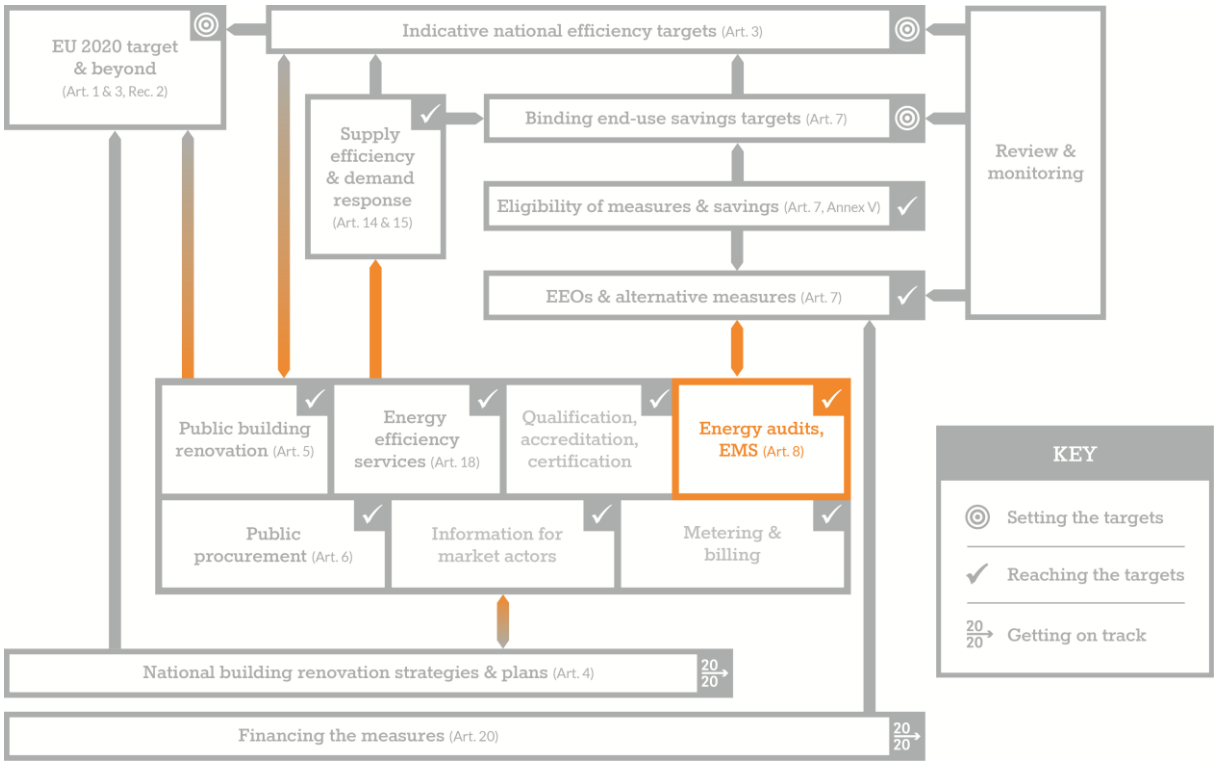

Figure 22 – Guidebook Overview Map: Energy audits

II.5.1 Summary

In the EED, energy audits are defined as "systematic procedures" used to identify, quantify and report existing energy consumption profiles and energy savings opportunities in buildings, industrial or commercial operations or installations, and in private or public services. Energy management systems (EMS) are defined as sets of elements of plans establishing energy efficiency objectives and strategies to achieve these objectives. Energy audits are an integral part of energy management systems.

The EED requires MSs to promote high-quality energy audits in their territories and ensure that their large enterprises are subject to regular energy audits at least every four years. The EED thus differentiates clearly between the requirement for MSs to promote and encourage the use of energy audits in small and medium-sized enterprises (SMEs), households and other small end users, and the requirement for MSs to oblige large enterprises to carry out regular energy audits.

For SMEs**,** households and all smaller final customers, MSs must promote the availability of high quality, cost-effective energy audits, *inter alia* by developing programmes to encourage SMEs to undergo energy audits and implementation of the recommendations resulting from these audits. In addition, MSs will establish advice and awareness-raising programmes to inform households of the benefits of energy audits.

For large enterprises, however, MSs must ensure that they carry out energy audits of their buildings and installations at regular intervals not exceeding four years, starting 5 December 2015 at the latest.

National legislation to transpose the energy audit obligations for both SMEs and large enterprises, including all necessary regulations and administrative provisions, must be brought into force in MSs by 5 June 2014. Penalties for non-compliance with the obligations on large

enterprises to carry out energy audits must also be communicated to the Commission by that date.

For reporting, MSs will inform the Commission on a regular basis of the total number of energy audits undertaken in their territory and complete an inventory of the number of obligated large enterprises in operation, as well as the number of energy audits carried out in these enterprises. MSs must also include information on the available qualification, accreditation and certification schemes for the providers of energy audits in their National Energy Efficiency Action Plans. Article 16 of the EED requires MSs to ensure the availability of these schemes by 31 December 2014 for providers of energy audits and for energy managers and, if necessary, to establish suitable training programmes for them.

II.5.2 Background

The EED gives energy audits and energy management schemes a substantial role to play in improving energy efficiency in the end-use sectors. The 2006 Energy Services Directive (ESD)[1] established an obligation for MSs to ensure the availability of efficient, high-quality energy audit schemes to all final consumers, including smaller domestic, commercial and small and medium-sized industrial customers. The EED goes further than the ESD by creating a clear obligation placed on large enterprises to carry out energy audits regularly.

The justification for setting a threshold for the size of the enterprises required to carry out energy audits lies in the fact that large enterprises consume more energy than SMEs, and thus have greater energy saving potentials. In addition, energy audits, including audits that are part of an energy or environmental management system, are less of a cost burden for large enterprises than they would be for SMEs, not to mention households and other small end users.

It is important to bear in mind the intended use of energy audits in the EED. In addition to identifying, quantifying and reporting current energy consumption, an energy audit is also designed to provide reliable technical and economic information for formulating feasible and cost-effective recommendations for energy efficiency improvement measures and packages of measures that would lead to measurable energy savings if implemented.

The usefulness of energy audits thus depends to a large extent on the expedient and effective implementation of their resulting recommendations, and systematic application of energy management schemes. The importance of the implementation of these recommendations is indicated in paragraphs 1(b) and 2 of Article 8, where MSs are required to develop programmes to "encourage SMEs to undergo energy audits and the subsequent implementation of the recommendations from these audits." Though the EED does not require MSs to provide financing or otherwise ensure the implementation of the audit's recommendations, even highly cost-effective ones, the financial facilities to be established under Article 20 or the use of the Structural Funds could be useful sources of funding.

The EED also encourages MSs to set up support schemes for SMEs and to conclude voluntary agreements to defray or cover the costs of the actual energy audits and implementation of the recommendations. Several MSs already have such voluntary agreements and subsidy schemes for this purpose. It is important that these agreements do not conflict with State Aid rules.

II.5.3 EED requirements and provisions

In addition to the key elements of energy audits and energy management in the summary to this chapter, it is important to be aware of a number of details set out or implied in Article 8, Annex VI and other parts of the EED.

[1] OJ L 114, 27.4.2006, p. 64-85.

SMEs, large enterprises and the scope of their obligation

An SME, including a micro-enterprise, is defined in the EED as an enterprise that employs fewer than 250 persons and has an annual turnover of €50 million or less, and/or an annual balance sheet total of €43 million or less. Excepting households, all other entities, regardless of their legal form, engaging in economic activity that exceeds these thresholds are considered large enterprises. Any linked or partner enterprise, defined as holding 25% of capital or voting rights, or vice versa must be added to the enterprise to determine whether it is a large enterprise or not.

National labour rules apply as regards the definition of employees, normally excluding apprentices and students with training contracts, as well as those on maternity or parental leave.

Inclusion of transport systems

Where they constitute a share of the energy consumed in overall operations, transportation systems within or related to an enterprise shall also be included in the energy audit of the enterprise, according to Annex VI of the EED.

Certification and quality assurance

Article 16 of the EED requires MSs to ensure the availability of certification, accreditation and/or qualification schemes by 31 December 2014 for providers of energy audits and for energy managers and, if necessary, to establish suitable training programmes for them. The criteria for determining the necessity of establishing such schemes and training programmes are left up to MSs to determine, based on a judgment of whether the existing national level of technical competence, objectivity and reliability is considered sufficient or not. Fulfilling the national certification, accreditation or qualification scheme also allows "in-house" experts or auditors to carry out energy audits of their own installations and buildings.

Annex VI sets out a number of quality criteria for the energy audits themselves. These criteria, or national schemes based on the criteria in Annex VI and prepared by the MS, have to be met by the energy audits being used in the MS to fulfil the obligations in Article 8 and the other articles pertaining to energy audits.

Recommendations from the audits

Recommendations from the energy audits described in the EED are the result, in accordance with Annex VI, of representative and quality data collection and calculations. These calculations shall build whenever possible on life-cycle cost analysis (LCCA), instead of Simple Payback Periods (SPP). As such, the recommendations are based on detailed and validated calculations for the proposed measures, taking into account the full service life and residual values of the individual measures and their investments.

Audits meeting the criteria set out in Annex VI will thus provide clear and reliable information on potential investments and savings, by calculating net present values, cash flows and the resulting discounted savings over time. This enhances considerably the quality and value of the recommendations.

Exemptions, including the use of EMS

Large enterprises may be exempted from or be considered as already fulfilling the requirement to undergo regular audits, provided one of following conditions is met:

- The enterprise in question has been and will continue to be subjected to equivalent and equally regular energy audits that are implemented under a voluntary agreement, and the audits meet the minimum criteria set out in Annex VI of the EED. The voluntary agreement must be between an appointed body and an obliged stakeholder organisation and supervised by the concerned MS, a delegated body or the Commission; or

- The enterprise is implementing a certified energy or environmental management system according to a relevant European or International Standard, such as EN ISO 50001 or EN ISO 14000/1, that also includes an energy audit, like EN 16247-1. It must also meet the minimum criteria set out in Annex VI.

EN ISO 50001

EN ISO 50001 is a European and International Standard for energy management systems. It helps all types and sizes of organisations to establish, evaluate and report on systems and processes to improve their energy performance. It is compatible with environmental management standards such as EN ISO 14001 and quality management standards such as EN ISO 9001.

EN ISO 50001 stresses the involvement of executive leadership.

Public buildings and energy audits

According to Article 5 of the EED, MSs shall also encourage public bodies, including those at regional and local level, to put in place EMS, including energy audits.

Use of Annex IX on cost-benefit analysis

Part I and Part II of Annex IX on cost-benefit analysis of the EED are primarily designed to be used in the framework of Article 14 on the promotion of efficiency in heating and cooling, though this annex can provide valuable guidance on methodologies, assumptions and reference values. This guidance could well prove to be useful in mandatory energy audits, where these technical systems are often included. Annex IX also provides a link between the energy audit at enterprise or site level and the cost-benefit analysis undertaken at local, regional or national level and in a societal context.

Penalties

Because the implementation of Article 8 requires MSs to impose obligations on third parties, MSs must also establish effective, proportionate and dissuasive penalties for non-compliance with the obligations on large enterprises to carry out energy audits. They must also be communicated to the Commission within 18 months of the EED's entry into force.

II.5.4 Legal checks and recommendations

Legal check

1. Following the definitions and criteria established in the EED for large enterprises, check that a consistent and updated database of these obliged entities is established by an authorised implementing body, and that they are notified at the appropriate time of their regular energy audit obligation (see Articles 2(26) and 8.4-8.6).
2. Ensure that a system is in place to check the quality of all energy audits and that correct methods are being used in carrying out the audits, including life-cycle cost analysis (LCCA). Link this system with clear rules and notifications for penalties for non-compliance and substandard compliance (see Article 13 and Annex VI).
3. Ensure proper and recognised certification and approval procedures are in place when obliged entities apply for exemptions from carrying out energy audits on the basis of pre-existing or new voluntary agreements or certified energy or environmental management systems according to a relevant European or International Standard (see Articles 8.4-8.6 and 16.1).

Good practice recommendations

1. **Energy audits that meet the minimum financial and economic criteria and demands set out in Article 8 and Annex VI of the EED, as well as investment-grade audits, are promoted. The latter, also based on life-cycle cost analysis,**

provide additional guidance for future investments and maintenance, whenever this is appropriate and proportionate.

Investment-grade audits, when chosen, should be able to predict with considerable precision the net present values and cash flows created by investments in different energy efficiency measures and packages of measures in buildings, in industrial sites and processes and in transport systems.

2. **Encourage MSs to provide clear and strong incentives for SMEs and households to undertake audits and implement the recommended measures.**

MSs should go beyond the EED requirements to cover the cost of audits and subsidise the cost of implementation of those resulting recommendations with favourable net present values that the market might not otherwise take up, due to barriers such as their long-term nature or high upfront costs. High upfront costs, which often worsen the "economic feasibility" of investments, can be overcome using proper LCCA, provided limited incentives such as default guarantees or soft loans are made available. Such high quality audits allow the needed precision for these investment decisions to be carried out. The implementation of recommendations from audits is much more likely when EMS are fully in place and benchmarks and economic calculation methods (such as LCCA) prove the economic viability of the proposed measures. This risk of waste serves as an economic justification for incentive schemes linked to audits.

3. **Encourage MSs to raise the quality of audits used in building certification in the EPBD.**

Audits required in the EPBD[2] may not be of sufficiently high quality to meet the criteria set out in Article 8 and Annex VI of the EED. MSs should take advantage of the spill-over effects of the higher EED requirements for energy audits, in order to improve the quality of audits associated with the EPBD.

4. **Encourage large enterprises to be early adopters of audits.**

Regarding the EED requirement for large enterprises, even audits undertaken before 5 December 2015 have a lifetime of four years, making a strong argument for early transposition. For example, if an audit is undertaken in December 2013, the next one can take place in December 2017.

5. **Ensure that energy audits and EMS account for peripheral use of energy.**

In the further development of energy audits and energy management schemes, the focus on processes in industry should not lead to reduced emphasis on improving energy efficiency in peripheral energy uses, such as lighting, control systems and heat losses from industrial buildings, heat losses from infrastructures serving high-temperature processes and other installations related to industrial processes, such as piping, storage facilities and ventilation systems. These areas can be addressed through improved standards, ambitious default values in planned energy supplier obligations, incentive schemes and benchmarking systems.

6. **Use benchmarks to determine best performance levels in industrial processes and peripheral applications.**

Audits and energy management schemes can and will provide much information on how much to improve energy efficiency in an economically effective manner. There will continue to be a need for best practices and benchmarks to determine best performance levels in processes and peripheral applications. MSs are therefore recommended to increase their efforts in benchmarking exercises and in the sharing of best practices as a natural complement to the increased use of energy audits.

[2] OJ L 153, 18.06.2013, p. 13-35.