CONCERTED ACTION
ENERGY EFFICIENCY
DIRECTIVE

The Concerted Action for the Energy Efficiency Directive

Executive Summary Report

July 2014

Introduction

The Concerted Action for the Energy Efficiency Directive

The Concerted Action for the Energy Efficiency Directive (CA EED) was launched in spring 2013 to support the effective implementation of the European Commission Directive on Energy Efficiency (2012/27/EU), henceforth the EED, in all 28 EU Member States (MS) as well as Norway. By providing a trusted forum for the exchange of experiences and collaboration, the CA EED helps countries learn from each other, and so avoid pitfall and build on successful approaches when implementing the EED.

The CA EED is financed under the Intelligent Energy Europe Programme of the European Commission, and builds upon the second Concerted Action (CA ESD II) that supported the implementation of the European Commission Energy Services Directive (2006/32/EC), henceforth the ESD. The CA EED benefits therefore from a strong European network, and from a wealth of information already gathered and lessons learned.

More specifically, the objectives of the CA EED are to:

- Enhance and structure the sharing of information and experiences from national implementation whilst promoting good practice concepts in activities to improve and strengthen MS implementation of the EED.
- Create favourable conditions for an accelerated degree of convergence of national procedures in EED related matters.

The work of the CA EED is structured around eight main focus areas that cover the key requirements of the Energy Efficiency Directive:

1: National Energy Efficiency Action Plans (NEEAPs) and annual reports and measuring progress in energy efficiency
2: Public Sector - public buildings and public purchasing
3: Metering and billing, demand response and grid issues
4: Funds and Financing for energy efficiency
5: Energy services and energy services companies (ESCOs), energy auditing, solving administrative barriers
6: Consumer information programmes, training and certification of professionals
7: Efficiency in Energy Supply, high efficiency Combined Heat & Power (CHP) and heating/cooling
8: Energy efficiency obligation schemes, monitoring the impacts of eligible measures

In practice, the work carried out within the CA EED is organised around a series of 11 two-day meetings spread over the six-year duration of the action. Each meeting involves a number of parallel sessions focusing on specific subtopics within the main focus areas. For each subtopic, a team composed of 2 to 3 participants from different MS is established, and is in charge of collecting information, preparing discussions, and summarising key findings in a report after the meeting.

Each of these reports is based on input from the 29 participating CA EED countries (i.e. all then-current EU Member States, plus Norway), as well as the conclusions and recommendations emerging from group discussions at the meetings.

The first meeting was held in Dublin, Ireland, the second was held in Vilnius, Lithuania, and the most recent took place in Athens, Greece, in March 2014. This report covers the findings and recommendations

Good practice example

A CA Croatian representative said:

"When looking for national solutions you always look at others, and the Concerted Action provides you with the opportunity to ask the right person detailed questions. This is effective and efficient. We have gained information that has helped us develop our monitoring systems; we organised a study tour to the UK; and we have had contacts with Poland related to white certificate systems. The Concerted Action provides a good opportunity to learn about solutions that may be applicable in your own country."

of every topic covered by all eight focus areas at these three meetings. To enable the findings to be put into context, the date each subtopic was discussed is also given. Where possible, the results are illustrated with a number of examples of best practice at work in various Member States.

More detailed and in-depth reports on each of the various topics covered to date are available via the CA EED website - www.ca-eed.eu/reports

The eight CA EED key focus areas

1 NEEAPs and annual reports and measuring progress in EE

Overview

The EED includes many reporting, notification and other reporting-related requirements for Member States. Annual reports provide a basis for monitoring the progress towards national 2020 targets, while National Energy Efficient Action Plans (NEEAPs) – produced every three years - provide a framework for strategy development.

The EED required all MS to submit a NEEAP by April 30 2014. Article 4 also required MS to publish the first version of a long-term building renovation strategy by the same date, and to update it every three years thereafter, as part of the future NEEAP. The minimum information to be included in the NEEAP is specified in the Directive, Annex XIV.

EED reporting-related requirements (reported March 2013)

The European Commission provided a template and guidance for compiling the NEEAPs. The use of these was recommended but not obligatory. Only the compulsory elements required in the EED were included in the template, while the guidance also covered optional reporting elements.

The different targets set in various articles of the EED, and how these are connected, remained challenging for many MS. It also caused difficulties for MS implementing organisations tasked with informing and explaining the EED to relevant stakeholders at national level. Another issue was the timeframe for EED reports and notifications, considered demanding by many MS. Some were concerned about their ability to produce the quality of information aimed at by the EED. Many considered the requirement to include all measures when setting the target (Article 3 of the EED) problematic, as many did not have a clear picture of the measures and policies they would adopt or need to achieve their target. Fulfilling these reporting and notification requirements stretched their resources to their limits. However, separating the obligations for the EED made it easier for them to keep track of them and their due dates.

The CA EED's research provided Ministries and implementing bodies with a tool for developing a checklist for reporting. It also distinguished between the different forms of reporting, supporting the furtherance of the general understanding of the Directive.

1st annual report and processing of the 1st EED NEEAPs for 2014 (October 2013)

The 1st EED NEEAP of 2014 required the reporting of energy savings to show progress towards the 2016 national target for final energy savings, as set by the former Energy Savings Directive. MS said they set their national targets in various ways, and differed in how they plan to use previous work when preparing the NEEAP.

The most common options for setting indicative national targets according to EED Article 3(1) were final energy consumption and primary energy consumption. In most MS, national circumstances that affect primary energy consumption were taken into account when setting targets. GDP forecasts were also important influencing factors, as was the development of various energy production options.

Most MS have introduced new or updated legislative and/or non-legislative measures fulfilling EED provisions since the previous NEEAP. Measures included funding and other financial instruments and covered e.g. buildings and heating systems; education and training; energy services; solar energy in buildings.

Updated measures were mainly related to existing obligation schemes.

Most CA participants also said they planned to use the work done for the energy savings calculations and their reporting for the 2nd ESD NEEAP when preparing their 1st EED NEEAP for 2014, and they would use the same calculation methods. The majority however, either did not have a methodology or a description of how to calculate and/or estimate expected primary energy savings in 2020, or they had not yet considered the issue or made a final decision at the time of being surveyed. Savings were only expressed in primary energy terms in a minority of MS. Most used conversion factors.

Good practice example

Writing the French NEEAP

"The NEEAP gives a comprehensive overview of our energy efficiency policies. The evaluations in it are also very helpful in identifying the sectors generating most energy savings, and the sectors where more efforts are needed. [In writing it] we built on our experience of writing the previous NEEAP. One of the biggest challenges was linked to the tight schedule (getting input from stakeholders, validation process, etc.). We tried to anticipate our need for data as much as possible, especially related to evaluations, and to consult with the relevant stakeholders at different stages of the project."

EED Article 4 long-term strategies and processing of the NEEAP 2014 (March 2014)

In most MS, the EED Article 4 long-term building renovation strategy was seen as a demanding task with a short timeframe. The 1st EED NEEAP (NEEAP-3) had to be delivered by April 30 2014, and the first version of the Article 4 long-term building strategy had to be submitted as part of that.

There were several common themes across MS when developing strategies. Most used existing information where available; the residential sector was the best understood; and it was widely agreed that addressing the barriers to uptake should be part of the strategy. In most MS, modelling was more detailed for the period up to 2020, and less certain for longer timeframes. There was, however, no clear consensus about what represented a "longer time period". Understanding the processes in consumer decision making was also considered vital; and consideration of the multiple benefits of EE was viewed as an important part of any strategy.

Most CA participants found preparing NEEAP-3 challenging. The problems they encountered included the heavy reporting burden imposed by the EED and its tight deadlines; dealing with new chapters that were not present in previous action plans; and the double-reporting of the same issues in different parts of the plan. MS said they were using NEEAP-2 as much as possible as a basis for preparation of NEEAP-3. The European Commission's template and guidance documents were being used by all MS, and seen as a great help, although some said there were confusing discrepancies between the two documents.

The inclusion of primary energy savings in the NEEAP-3 differed between MS, but all MS CA representatives said that final energy savings would be reported while using the calculation methods established for NEEAP-2.

Measuring energy savings from soft measures (March 2014)

Articles 12 and 17 of the EED highlight the implementation of behavioural measures to promote an efficient use of energy through instruments and policies. Such 'soft' measures are also eligible as Article 7 measures, and one method for calculating savings in Annex V is dedicated to them. Measuring the impact of soft measures has been a challenge however.

Half of all MS included soft measures in their Article 7 notification report for the European Commission. These measures encompassed for instance national energy performance certificates for buildings, product labelling, audits, energy management, education, training, information campaigns, smart meter deployment and capacity building with networks. Only some MS calculated energy savings for these measures. The most common methods used for this were deemed and surveyed savings, and savings based on studies or small-scale trials.

It was agreed that information campaigns and awareness-raising activities will be needed in all MS to achieve behavioural change among consumers towards more EE choices. Such campaigns could have other positive impacts besides energy savings and these must also be taken into account. Information gained regarding consumer behaviour could be used to tailor other policy interventions more successfully. Budgets for these activities must therefore be ensured.

Few MS evaluated soft measures in ways other than energy savings. Further effort will be needed to capture the wider qualitative benefits. This topic is covered in more detail in Chapter 8, below.

Good practice factsheets

Good practice factsheets for the topic NEEAPs can be downloaded from: www.ca-eed.eu/good-practices/good-practice-factsheets/neeaps

2 Public Sector - public buildings and public purchasing

Overview

The EED requires the public sector (PS) at national, regional and local level to fulfil an exemplary role in EE. This covers both public buildings (Article 5) and public procurement (Article 6).

Article 5 permits two approaches to improving the energy performance of public buildings: the 'default' and the 'alternative', along with various flexibility mechanisms. The 'default' approach stipulates that as from January 1 2014, each MS shall ensure 3% of the total floor area of heated and/or cooled buildings owned and occupied by central government is renovated each year to meet at least the minimum energy performance requirements it has set in application of the Energy Performance of Buildings Directive (EPBD). Under the alternative approach, MS may take other cost-effective measures to achieve at least the equivalent amount of energy savings in eligible buildings. Such measures may include deep renovations and actions resulting in occupant behaviour change, and savings are to be reported on an annual basis.

Inventories of central government buildings (March 2013)

Most CA participants said their MS had insufficient knowledge and experience of Article 5 to secure its smooth and secure implementation. Since the creation of an inventory is both complex and costly, they said the process of implementing Article 5 should be initiated, governed and monitored by central governments. The process of preparing inventories of government buildings differed across MS however, and at the time of the working group, few MS had decided whether to choose the 'default' or 'alternative' approach.

It was recommended that MS continue to develop their individual approaches in order to reach the renovation objectives set in Article 5. Another recommendation was that exemptions (Article 5(2)) should be examined at national level and presented to relevant bodies as a win-win-opportunity enabling energy cost reduction.

Assessment of the cost-effectiveness of renovating public buildings should also include broader social and environmental considerations, and since cost-effectiveness is important when choosing between the 'default' and 'alternative' approach, further elaboration of the issue is needed at EU and national level. Methods for estimating savings potential under the 'alternative' approach should also be further elaborated.

Where possible, existing building stock databases should be used as a basis for the inventory required by Article 5. The inventory should also serve other purposes, and thus its scope should be enriched by providing additional data, e.g. reduction of CO_2 emissions, or energy intensity.

The work undertaken by central government should be promoted and communicated effectively to regional and local governments to stimulate action. MS should encourage municipalities and other public bodies to adopt integrated and sustainable EE plans with clear objectives, and to involve citizens in their development. The Covenant of Mayors was seen as a good framework for this.

Those MS in which the EED and EPBD are currently implemented separately, or with only loose connections, should consider closer co-operation between the two to exploit the potential for synergy.

As the renovation obligations in Article 5 require substantial long-term funding, adequate financial resources were viewed as being of primary importance, and implementation should be carried out in close coordination with Article 4 implementation (national buildings renovation strategies and plans).

The Alternative Approach in Article 5 in Practice (October 2013)

This 'Alternative' approach to cost-effective EE measures in public buildings is stipulated in Article 5(6) of the EED. At the time of this working group, most MS had started implementing Article 5, but a majority had faced delays and difficulties. Critical factors for

successful implementation included political support, well-co-ordinated administrative infrastructure, human and financial resources, and the possession of reliable data.

At that time, most MS had not decided whether to adopt the 'default' or 'alternative' approach. The 'default' approach was seen as less flexible. The CA participants explained that in MS where building energy performances are already high, the payback times of deep renovation may be unacceptably long, making the 'alternative' option attractive. They also stressed that in MS where average energy performance of buildings is low, the 'default' approach should be the preferred option. Cost effectiveness is a deciding factor. While most CA participants understood the 'alternative' approach, some further clarification of definitions was required. Finding adequate methodology to measure savings resulting from behavioural change remained a challenge.

The recommendation was that public sector obligations in Article 5 of the EED should be further investigated, and best practices shared among MS. MS should also try to implement different Directives in a coherent way to avoid duplication. Achieving this may require organisational changes. For its part, CA EED will seek further co-operation with the CA EPBD in order to share knowledge and experiences.

Encouraging other bodies to follow central government exemplary role in building renovation (March 2014)

MS have an obligation under Article 5(7) of the EED to encourage public bodies at regional and local level to follow the central government exemplary role through building renovation at regional and local level.

At the time of the working group discussion, around half of all MS had already started the renovation of public buildings. The main booster for this was the EPBD, but the EED was also cited as a stimulus. The most common measures undertaken by central government (the so-called 'Top-Top' approach) were a combination of adopting an EE plan; putting in place an energy management system; and using energy service companies (ESCOs) and energy performance contracting (EPC). Similar measures were most common at regional or local level, where public bodies received encouragement from central governments to renovate public buildings (the 'Top-Down' approach), although energy management systems, including energy audits, were completely lacking as measures at local level.

Little conclusive information was available about what measures or approaches implemented at regional or local level might contribute to the fulfilling of Article 5 by central government (the 'Bottom-Up' approach). The Covenant of Mayors (CoM) could potentially play a role in this.

While most CA participants said the measures listed in Article 5(7) already offer a wide enough range of options, other additional measures could include: setting up mandatory performance standards; prompting behavioural changes through awareness and information campaigns for employees; and the knowledge and experience sharing between central and local levels in both directions.

The recommendation was that MS should try to set up individual targets for the renovation of public buildings, to be implemented by administrations and the services under their responsibility, as well as monitoring and reporting commitments. The connections between the measures implemented at local level and the energy performance improvement of the governmental buildings should be investigated. Ways should also be found to overcome the weakness of the 'default' approach that may suffer from a lack of financial resources and the scarcity of technical skills in the PS. Projects launched by central governments should be fostered and developed by local stakeholders.

Good practice factsheets

Good practice factsheets for the topic Public Sector can be downloaded from: www.ca-eed.eu/good-practices/good-practice-factsheets/public-sector

Good practice example

Finland's move towards smarter procurement processes

The Finnish government employed the services of energy specialists Motiva in a project to facilitate sustainable procurement decisions, by providing an environmental database of products, a free help desk, and demand/supply dialogue facilitation. The project involved several government ministries, but in their role as coordinator, Motiva was able to connect the initiatives stemming from different policy areas - environment, energy efficiency, transport, innovation, construction, ICT, etc. - into a one-stop-shop for public purchasers. This move was also in line with Article 6 of the EED, which came into force on June 5, 2014, and requires "Central Government Departments" in MS to purchase only highly energy efficient products, services and buildings, with reference to a list of standards and benchmarks provided for in other EU legislation (as set out in Annex III of the Directive).

Good practice example

The CA participants recommended the action plan for art. 5(6) effective implementation

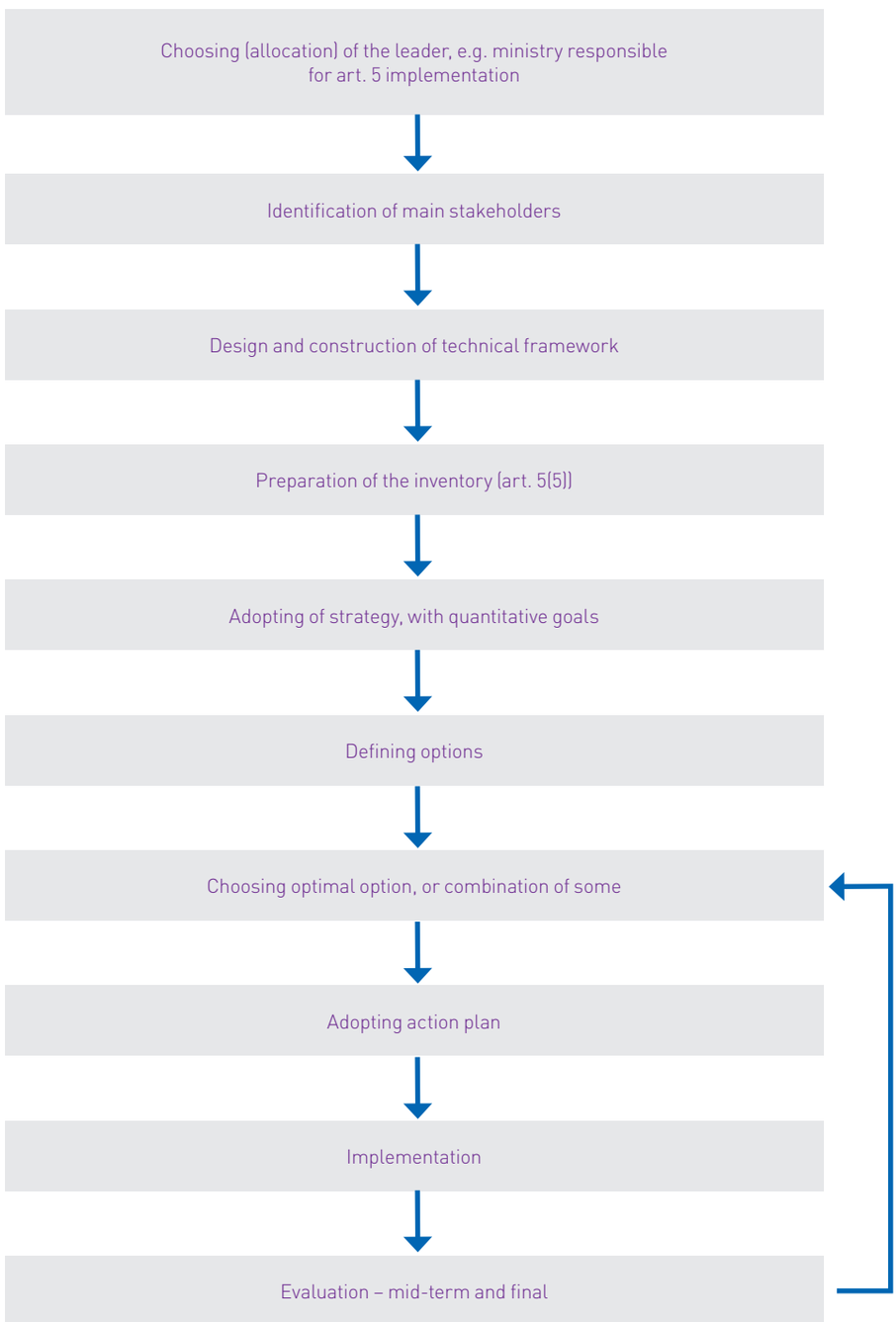


Figure. 1. Action plan for effective implementation of art. 5(6) of the EED

3 Metering and billing, demand response and grid issues

Overview

There are many different metering and billing situations in the EU for the five different energy products (Electricity, Natural Gas, District Heating, Cooling, and Domestic Hot Water). There are also considerable variances in the way MS are implementing Articles 9, 10, 11 and Annex VII of the EED.

Metering and Billing - Current Status and Issues (March 2013)

The implementation of the EED requirements for electricity metering and billing could be achieved in the short-term for almost all MS. But some CA participants thought the costs and technical difficulties regarding natural gas might bring unexpected additional challenges. Regarding district heating, cooling and DHW, there would be a high degree of difficulty if meters needed to be installed for all single end-users. Neither the current feedback for final customers, nor the definition of 'technically possible, financially reasonable and proportionate', were considered satisfactory by CA participants, and MS said they needed more details about these. It was stressed that without agreement on standards or criteria for consistent usage of these stipulations, some MS could potentially use them as an 'escape route' to avoid taking action. Therefore, the joint development of standards or criteria for consistent usage was considered essential.

CA representatives also highlighted the need to assess what is 'technically possible, financially reasonable and proportionate' in order to avoid ineffective investments. These assessments are often country specific and need to be addressed further.

Regarding district heating, cooling and hot water, local situations and views on implementing the metering and billing stipulations varied strongly between MS. According to the CA participants, more effort needed to be made to retrieve information from MS in order to construct a 'blueprint'. Individual meters in these cases should also take into account both volume and temperature.

Although Article 11 of the Directive says customer bills and billing information should be free of charge, most CA participants did not expect energy companies to act accordingly. Regulation may thus be necessary to prevent suppliers charging customers via other tariffs.

CA participants identified a clear link between the roll out of smart meters and the relevant metering and billing stipulations in the EED. The roll out was having a direct impact on costs and benefits and on technical aspects of the various stipulations in Articles 9, 10 and 11. As the roll out of smart meters was developing rapidly in many MS, it was seen as a challenge to define this impact exactly.

Regarding information supplied to end users about the advantages of smart meters, MS had different market models, resulting in different tasks for different parties. Complications arose if the party providing information was not the same party that installed the meter.

Article 15 – Measures undertaken and planned to enable and promote demand response (October 2013)

Article 15 covers "Energy Transformation, Transmission and Distribution" and is interrelated to Annex XI and Annex XII. The aim is to maximise grid and infrastructure efficiency and promote demand response (DR). This is a tariff or programme designed to prompt changes in the energy use of final customers, in response to changes in energy price over time, or as a result of incentive payments.

Demand side management (DSM) or load management has long been used in the power industry to reduce energy consumption and improve efficiency through the implementation of policies and methods to control demand. This is usually a task for power companies/ utilities in order to reduce or remove peak load, and is thus a top-down approach. DR however implies a bottom-up approach: the customer manages his/ her own consumption to achieve efficiency gains and economic benefits.

Since electricity cannot be stored economically, grid circumstances and demand can change rapidly, and new infrastructure requires major investments, power grids must be planned years in advance to ensure they operate reliably in real time.

CA participants concluded that DR offers the flexibility to address these challenges at relatively low cost, and pilots have shown that tailor-made stimuli will result in consumers changing their behaviour and contributing to EE objectives. DR will only be successful however if developments and interests in other parts of the energy value chain are taken into account. It is equally important to consider the market model. Enabling DR will require both the removal of existing barriers and the promotion of additional programmes. It was therefore seen as important to plan the best way to take advantage of the implementation of Article 15.

The THINK[1] project supported by the European Commission has developed a report which provides a sophisticated overview of contract types and consumer preferences (risks). MS may use this to ensure that end users have choices regarding dynamic pricing and DR so they can fulfil their own needs with a customer friendly offering.

Cost Effectiveness of Individual Metering/Billing (March 2014)

In Europe, heating and cooling accounts for an estimated 49% of final energy demand. Cooling, ventilation and refrigeration can account for 20% of a building's total electricity consumption, depending on location. Where many buildings are heated and cooled from a central source, substantial EE improvements can be realised by making users aware of their usage, by introducing individual metering & billing. In many MS, this is considered as a cost-effective and quick way to reduce emissions, and improve energy security and competitiveness. Articles 9(1) and (3) of the EED require that, in multi-apartment and multi-purpose buildings with a central heating/cooling source or supplied from a district heating network or central source serving multiple buildings, individual consumption meters shall be installed by 31st December 2016. Articles 10 and 11 also require MS to create rules for billing information and the costs of billing homogenisation.

Due to climate and political organisational differences, characterising the current situation of each MS is complex, and there is no single solution. Pilot cases involving individual energy meters for heating, cooling or hot water have shown savings averaging 20%. This reduction was purely the result of changes in final consumers' habits.

Energy savings related to the installation of individual meters depend on the energy quality level of the building and vary between MS. For instance, some CA participants believed the benefits of individual meters were negative in their country, although they acknowledged the necessity to invest in control systems or other EE measures. In general, a metering system was seen as most useful when installed prior to the identification and installation of EE measures, and participants said there was a need to legislate and invest in a combination of control systems and individual metering for heating, cooling and hot water.

A list of criteria and a set of guidelines to estimate the cost-effectiveness of individual metering and billing of heating, cooling and hot water consumption is currently being drafted by CA participants from the UK and Sweden. This will include the cost of educating end-users.

The overall focus of individual metering and billing for heating and hot water was on the residential sector in the EU, and was generally considered to have a significant impact. All CA participants believed they could learn from each other. This indicated a high need and a high potential for sharing information among MS.

Good practice example

Customer-friendly individual heat metering in NL

The Dutch Heat Act, which covers district heating situations and centrally heated buildings, came into effect on January 1 2014. It applies to an estimated 900,000 customers, mainly households. The Act made individual heat metering and billing mandatory, provided it is technically and economically feasible. Previously it had only been applied on a voluntary basis. The indications are that introducing individual metering with direct feedback will result in significant energy efficiency improvements.

1 www.eui.eu/Projects/THINK/Documents/Thinktopic/Topic11digital.pdf

4 Funds and financing for energy efficiency

Overview

EE measures and projects are financed in different ways. The public sector, national and local governments, and the EU are continuously working on incentives to encourage energy efficiency investments.

Article 20 of the EED states that MS shall facilitate the establishment of financing facilities, or the use of existing ones, for EE improvement measures to maximise the benefits of multiple streams of financing. The objective of this focus area is to address the conditions that are required in order to achieve this, and to facilitate the exchange of good practices between the responsible national implementing bodies. Due to the horizontal nature of funds and financing, the focus area is also looking at ways how different provisions and measures set in the EED can be supported and implemented from a financial perspective.

Involving banks in energy efficiency financing (March 2013)

CA participants said they expected the involvement of banks in EE financing to gain more attention in future across all sectors. In principle EE financing should rely on market mechanisms, and public funds should only be used where market failure occurs. The EED however, requires MS to encourage the use of financing facilities to further the objectives of the Directive. Bank financing was therefore seen as critical for developing EE projects at scale, and it was agreed the ability of MS to reach CO_2 reduction targets will in part be reliant on the deployment of private sector as well as public finance in the right packages at the right scale.

Many banks already had packages to support EE and other green investments, but many barriers prevented lenders providing financing and borrowers receiving funds, such as lack of awareness, long payback periods, mistrust of financiers/suppliers, and risk perception. Different beneficiaries (households, SMEs, municipalities, etc.) also had different needs, and financial products had to be adjusted accordingly.

Some barriers to bank financing have been addressed, but others such as the high risk perception and low attractiveness of EE financing for banks or the lack of reliability in the EE policy framework, have not.

CA participants concluded there was a growing need to understand and tackle these barriers at EU, national and local level. Solutions could include: 'Concerted Action' on finance, bringing together public and private sector actors at national level; creating a market comparison website of EE options and products and associated finance; information exchange and collaboration between technical experts and financial experts; better use of EU funding opportunities (e.g. project development assistance projects); integrating EE into everyday decision-making; harmonising existing EU databases and creating a detailed building performance database.

The role of governments will be key, since public funding can leverage significant private sector investment. A pipeline of projects must be fostered in order to reach a bankable size of investment.

Financing renovation of 3% of central government buildings (October 2013)

MS will have to identify sources and schemes to finance the renovation of central government buildings under Article 5 of the EED, which requires that as from 2014, 3% of the total floor area of heated and/or cooled buildings owned and occupied by central government is renovated each year, or equivalent savings achieved by an alternative approach.

Several EU-level financial sources are applicable to help the PS renovate their buildings: e.g. EEEF (European Energy Efficiency Fund), JESSICA (Joint European Support for Sustainable Investment in City Areas), and ELENA (European Local Energy Assistance). These sources, however, only provide limited support compared to the total amount of investment needed. Other financing opportunities are EU Structural and Cohesion Funds (SCF), the use of which depends on the priorities of the respective MS, and financing options at national, regional and local level, including both public and private financing. Renovation grants are important, especially those provided at national level.

Despite the lack of available sources of information, those MS able to make estimations said the current rates of renovation and financing levels were well below that needed to meet the 3% target. As of August 2013, a third of MS had no plans for financing their obligations under Article 5, and two-thirds had not made any estimation about the funds needed. Most expected a lack of funding to be a serious problem. Other problems included a lack of capacity to create a financial plan, and accounting difficulties.

Best Practice in leveraging market finance through public funds (March 2014)

Since costs for energy efficiency improvements may be recovered entirely or partially through verified energy bill savings over a certain period of time, Energy Performance Contracting (EPC) could be an interesting model in a time of restricted Public Sector (PS) budgets. More specifically, there are a variety of risk sharing and contractual models that could be applied to finance energy efficiency projects. Depending on the contract, the ownership of assets might vary and finance for the project could remain on or off balance sheet.

However, CA participants said the use of energy performance contracting in the PS was being hindered by several challenges, including: stringent EU purchasing rules; issues of public debt and the implementation of national and EU accounting rules related to the issue of on/off balance sheet accounting; concern about the use of EU funds on ESCO projects; difficulties in preparing an accurate emissions baseline; the high transaction costs for smaller projects; and a lack of trust between the PS and ESCO companies, meaning risk sharing was not always handled in the right way.

More generally, EE improvements required financing from a wide range of resources. EU and national funds as well as private capital were available to start an investment, but there was a mismatch in the demand and offer sides. EE retrofits also did not produce direct income streams, but instead created avoided costs. Therefore the energy and associated cost savings were often not considered a tangible revenue stream by financial institutions.

In planning a policy or programme it would be beneficial to combine funding sources with other instruments (regulations, tax schemes, etc.). Public finance is often needed to kick start the EE market, but the eventual goal is to shift more towards market-based financing solutions. The exact structure of these, and options to retain project control or to outsource delivery and risk, were all seen as important considerations, and they rely on the involvement of finance managers and EE experts. Further awareness-raising of the available options, and institutional capacity building in the public and private sectors will be needed if increasing amounts of finance are to be diverted into EE projects.

Bank financing was seen as critical, and many banks have already developed specific EE packages for households and companies to support investments or complement national programmes. CA participants suggested that governments should seek greater involvement of banks in future across all sectors.

Good practice factsheets

Good practice factsheets for the topic Funds and Financing can be downloaded from: www.ca-eed.eu/good-practices/good-practice-factsheets/financing

Good practice example

Energy Efficient Construction and Refurbishment in Germany

German state-owned bank KfW is working in close cooperation with the Federal Ministry of Building, Transport and Urban Development to implement the "Energy Efficient Construction and Refurbishment" programme. The aim is to provide financing by way of soft loans and grants for energy-efficient construction and refurbishment activities for the German residential sector. Since the programme was launched, the "KfW Efficiency House" standard has become a market-wide brand for energy efficiency in buildings. The promotional programmes have also had a proven and positive impact on the climate and the economy, by creating jobs and reducing emissions by 5.9 million tons of CO_2-equivalents per year in the period from 2006 to 2012.

5 Energy services and ESCOs, energy auditing, solving administrative barriers

Overview

Energy audits evaluate the state of energy 'health' of an organisation, service or system and identify potential savings. They are the first step in an energy services approach, and in energy planning. The EED encourages the use of energy audits by public authorities, sets an audit obligation for large enterprises, and presents a set of minimum criteria.

Energy audits can be carried out by qualified and/or accredited experts accordingly. They may be carried out by in-house experts or energy auditors, provided the MS has a scheme in place to assure quality. Audits may be implemented and supervised by independent authorities under national legislation.

Energy auditors fall under the certification requirements for energy service providers in Article 16 of the EED, which states that in a case where a MS finds the national level of technical competence, objectivity and reliability is insufficient, it shall ensure that, by 31 December 2014, certification and/or accreditation schemes and/or equivalent qualification schemes are set up.

Energy audits: obligations, minimum criteria and qualification, accreditation and certification schemes (March 2013)

Three aspects of the transposition of the EED are interconnected: qualification-accreditation-certification schemes for energy audits providers; minimum requirements for energy audits, taking into consideration Annex VI and Article 8(7); and the obligation under Article 8(4) for large enterprises to undergo an energy audit by 5th December 2015, and every four years thereafter.

According to the WG preparatory work, high-quality, cost-effective energy audits were already widely available in the household, buildings and industrial sectors, but were less common in other sectors. Most were being carried out by qualified or accredited/certified experts. Various methods were used to assure audit quality: auditor training, guidelines, tools and templates were common, as were accreditation/certification procedures.

The minimum requirements for energy audits in Annex VI were widespread among MS, but less consideration was being given to the storability of data and life-cycle cost analyses (LCAs), and there has been little uptake of the suggestion in Article 8(7) regarding the feasibility of connecting to district heating/cooling.

The CA participants stressed that useful, cost-effective tools (guidelines, templates for data collection and reporting, checklists, etc.) should be considered in setting up an audit programme. A database of energy audits would also be useful for managing and monitoring programmes, and could build confidence in the audit results among banks, making funding available. Audits should in addition contain financial indicators (e.g. Discounted Payback, IRR, etc) if those indicators are used by the decision maker, and/or if financing is required.

Incentives to carry out audits and implement suggestions were identified as a key factor for engaging a high proportion of those affected. Other requirements

Good practice example

Poland says:

"After the Czech environmental consultancy ENVIROS presented their PERMANENT (Performance Risk Management for Energy Efficiency Projects through Training) project at a CA ESD meeting in Cyprus, we met with them to discuss the possibilities for Energy Services Companies (ESCOs) and Energy Performance Contracts (EPC) in Poland. We also have used lots of good examples from ESCOs in Bulgaria, because they are several steps ahead of us."

Good practice example

The Italian TREND programme[2]

The TREND (Technology and Innovation for energy saving and efficiency in SMEs) project was aimed at promoting awareness, competencies and tools for energy efficiency in SMEs. It combined various tools and skills in a very valuable chain. Around 500 SMEs took part in the project and carried out energy audits on their own manufacturing processes. More than 150 of these planned in work to improve their efficiency as a result, and to implement the EE measures identified by the energy audits, thus supporting the EED implementation.

linked to incentives should also be considered, such as simplified management systems. A website for collection of and information about energy audits was considered a must. A dedicated web application offering other tools and information would also inform users. Web tool and databases were widely used and have often proved to be very (cost) effective.

After the audit: encourage the implementation of the identified measures (October 2013)

Energy audits identify opportunities to improve EE with both hard and soft measures, but if none of those measures are implemented, the audits have no positive effect. Other actions can therefore be carried out after an audit to encourage the implementation of the identified measures.

CA participants said the results of energy audits were already widely collected at national and/or local level. Some MS collected data on the savings generated by implemented recommendations, and many had programmes to stimulate uptake of audits and/or implement recommendations. In many of these support schemes the audit was part of a broader framework involving voluntary agreements, energy management systems, etc. But while more structured support schemes could deliver more, they were also regarded as more complex to set up and manage, and they required more resources.

Energy audits could be made compulsory for large entities over certain thresholds, and in 2 MS there already is an obligation to implement the recommendations. A number of different schemes/practices exist, and more details on some of these have been made available as good practice fact sheets and presentations, downloadable from the CA EED website.

Transposition of energy audit obligation for large enterprises (March 2014)

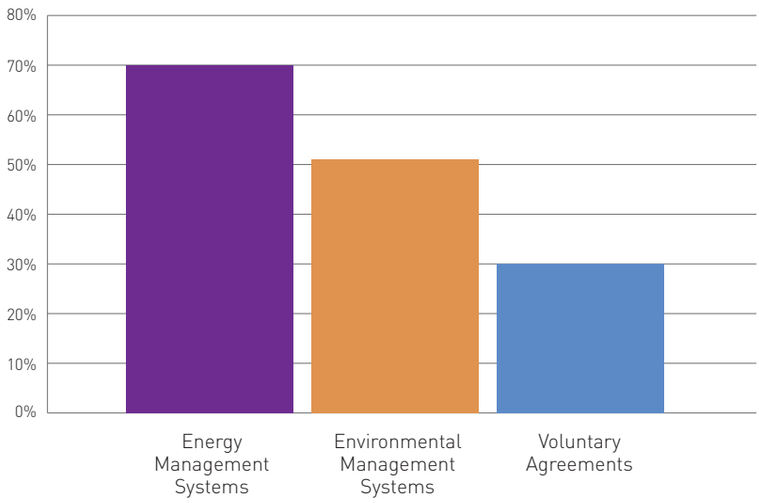
All CA participants reported that their MS had made progress towards the transposition of Article 8 of the EED, which covers energy audit obligations for large enterprises. MS adopted a wide range of approaches to implementation, reflecting national circumstances. Some developed more detailed planning, consultation documents and drafts of legislation, and others indicated they would be doing so in due course. Several MS planned to adapt existing incentive/obligation schemes to meet the requirements.

Options considered in fulfilling the energy audit obligation included allowing large enterprises to comply via a certified Energy Management System. Where the qualification and/or control of the quality of energy auditors was left to the market, such systems gave more guarantees of quality/results, due to the presence of the accreditation–certification chain.

Another option was to use voluntary agreements as a route to compliance. However, this required a more complex framework, and moreover, in some cases voluntary agreements were not welcomed by the boards of enterprises, as there was a risk the benefits would not be realised, and this was difficult to justify to shareholders. Nevertheless, MS agreed it was important to involve the enterprise's board after the energy audit to promote the implementation of recommendations.Several MS said they were already providing financial support for companies to undertake

2 www.trend.regione.lombardia.it

Figure 1. Options alternative to energy audit to comply with the obligation for large enterprises



energy audits. However, in most cases this will be affected by the energy audit obligation. Subsidies will cease for large enterprises when audits become obligatory. However, it will be possible to subsidise large enterprises to undertake more frequent (i.e. non mandatory) audits and implement recommendations, etc. Measures considered to ensure enterprises carry out audits on a regular basis included penalties, considered a necessary backstop to ensure compliance with Article 8.

CA participants found it challenging to create a list of large enterprises required to comply with the energy audits obligation. It was not considered cost effective to include SMEs in this process.

There was also a wide range of different approaches to energy audits. In most MS, there was no plan to go beyond the requirements of Annex VI. Some CA participants said that more detailed guidance on energy audits might be provided, while others argued that businesses should have greater discretion. However, where MS did not specify detailed requirements, this necessitated a greater focus on support tools and 'auditing the auditors', to ensure audits met standards required by the EED and added value to business. In several MS, energy audits will be required to meet the standard set by EN 16247-1 and/or ISO 50002. However, some participants were cautious as the latter standard was still under development.

Regarding the boundaries of energy audits, it was agreed that a certain minimum threshold for consumption could be identified and used to focus audits on the most significant aspects, but there was no consensus on whether a percentage of an organisation's total energy consumption to be audited should be specified and set in law. Uncertainties also remained on how to deal with externalised services (heating, transport, etc.), since considering them could potentially lead to double auditing/counting. One possible approach could be to assign consumption according to who pays for the energy.

Having a suitable qualification for energy auditors was seen as fundamental to ensuring high quality audits. There are, however, different approaches to this, and representatives of multinational enterprises have expressed concerns about internal auditors having to be recognised/certified in different MS. The EED contains no specific provision on the qualification of internal auditors - it is up to MS to decide. Although some MS had mutual auditor recognition, this was seen as difficult to extend to all MS.

In many MS, there were concerns that there may not be enough suitably skilled auditors to meet the demand from industry. There was also thought to be a need for auditors to have the skills to 'sell' recommendations to businesses in addition to identifying cost-effective recommendations.

CA participants agreed that the diversity in the transposition of the obligation between MS presented a challenge to ensure businesses are not put at a competitive disadvantage by different implementation. But the exchange of information presented MS with the opportunity to see what worked best and to learn from others.

Good practice factsheets

Good practice factsheets for the topic Energy Services can be downloaded from: www.ca-eed.eu/good-practices/good-practice-factsheets/energy-services

6 Consumer information programmes, training and certification of professionals

Overview

Member States use many activities, organisations and channels to inform and advise citizens and organisations about energy usage and EE investments, all of which may have an impact. Information and communication is a vital aspect of promoting EE according to the EED. However, this needs to be done accurately, often in dialogue with local and regional authorities, market actors and others. It is certainly not easy to inform in a way that citizens and companies understand and can then translate into action.

MS can learn from each other about empowering consumers (both citizens and small companies) to make use of EE technologies and to change their energy behaviour. We also need professionals that are reliable and competent, if we want the market to move towards EE. Both providers of energy services and energy audits as well as installers of energy-related building elements have important roles to play. The aim is to sustain and make available qualification and/or certification schemes, training programmes and other incentives for these groups of professionals, in order to increase their credibility.

Policies and national strategies to promote behavioural change (October 2013)

EED Article 12 says MS shall take appropriate measures to promote and facilitate an efficient use of energy by small energy consumers, including domestic customers. Most CA participants said their MS planned to implement the first option in this Article ("a range of instruments and policies to promote behavioural change"), and to prolong existing measures and programmes. Some saw a need for a new national strategy to fulfil the requirements. Information measures, subsidies and fiscal incentives were the most common planned measures. There were many examples of existing EE measures, indicating there was a lot going on, and MS were ambitious with reaching their 2020 goals.

Achieving behavioural change requires deep insight into consumers. It was therefore considered essential to communicate the right message. While designing an information campaign, messages must reflect the specific target group. Where there is a lack of interest in energy consumption in that target group, the message should provoke curiosity rather than guilt.

While few MS planned to implement option b) in Article 12 ("ways and means to engage consumers and consumer organisations during the roll-out of smart meters"), many CA participants said that their country may do so in future. Those that do should follow the example of countries that have already chosen to link information measures to the roll out of smart meters, and plan for communication at the same time as planning the roll out.

Designing measures for behavioural change (March 2014)

EED Articles 12 and 17 require MS to take appropriate measures to promote and facilitate an efficient use of energy by small energy customers, including domestic customers. Furthermore, MS shall, with the participation of stakeholders, including local and regional authorities, promote suitable information, awareness-raising and training initiatives to inform citizens of the benefits and practicalities of taking on EE improvement measures.

Recognising the importance of social context and social practices was seen as a must in order to successfully design and implement behavioural measures. Different approaches (sociological, physiological, economical, etc) may be needed. Practitioners should therefore be aware of ideas from several areas of research into behavioural change. The planning phase was seen as crucial. It is important to understand the whole system, what the key problem is, and which factors will make things happen. It is also important to keep the

message simple, and to clearly identify the target group and what their drivers and motivating factors are. When designing a measure for behavioural change CA participants said it was also important to identify and recognise other benefits of EE, such as health, well-being, convenience, etc.

Figure 1. Energy Efficiency Generates Variety of Benefits (IEA 2014)

One concern related to the implementation of the EED, was how to measure savings from measures for behavioural change in energy units. This was covered in Chapter 3, above.

Only 8 MS had evaluated measures for behavioural change in qualitative ways. This was viewed as an important task for the continued success of different measures and programmes, but was not easy, and evaluation was a continuous learning process. Sharing experiences was therefore also seen as being important.

Good practice factsheets

Good practice factsheets for the topic consumer Information Programmes can be downloaded from: www.ca-eed.eu/good-practices/good-practice-factsheets/consumer-information

Good practice example

Croatian energy efficiency information campaign

When the Concerted Action came into being, the level of awareness and knowledge about energy efficiency in Croatia was very low. This national campaign targeted the general public in order to raise awareness, with activities such as the establishment of local EE info points within local administrations. The campaign made energy efficiency a "hot topic", and the number of people believing they could reduce their energy consumption by implementing efficiency measures rose from 27.9% in 2007 to 47.7% in 2010. "We now have almost 90 EE points (centres, offices, corners) where citizens can get competent advice on how to improve energy efficiency in their homes. Energy efficiency is slowly rising on the political agenda and people are increasingly aware of the possibilities to reduce energy bills. Additionally, the media campaign itself was replicated in Montenegro with great success."

7 Efficiency in energy supply, high efficiency CHP and heating/cooling

Overview

The objective of EED Article 14 is to encourage identification of potential for cost-effective delivery of EE, and to foster secure delivery of these measures. It principally encourages exploration of the use of high-efficiency combined heat and power (CHP, or cogeneration) and efficient district heating and cooling (DHC), but also addresses other EE heating and cooling supply options. Article 15 and the related Annex XI is aimed at maximising grid and infrastructure efficiency and promoting demand response.

Efficiency in energy supply (March 2013)

There are many challenges and opportunities involved in the implementation of Articles 14 and 15. There are large variations in heating and/or cooling demand between MS due to climatic conditions and building design. There are also conflicting interests with the EPBD Directive, which stipulates that new buildings will be "near zero energy buildings" by 2020, and the RES Directive, which promotes an increase in the renewables share of electricity markets.

Although CA participants said they may profit from the exchange of experiences regarding the promotion of DHC and CHP, they agreed they must follow paths reflecting their individual circumstances. In some MS, consumer protection and strict heat price regulation prevented them from generating sufficient revenue to attract investment from efficient DHC and CHP systems. And since CHP plants need to run at base load capacity in district heating systems to be financially viable, this was a challenge in areas with a short heating season and/or large shares of renewable energy.

Promotion of CHP and DHC through public funding and other incentive schemes has also been hampered by EU state aid rules. Moreover, CA participants said there was a strong need for the dissemination of existing tools, methods and data, for heating and cooling mapping and for potential assessment. There was also a need to disseminate relevant information regarding specific experience at MS level, of cost-effective support schemes for promotion of CHP and DHC.

The implementation framework should cover the entire energy sector to ensure that high efficiency CHP and DHC is promoted in the most effective cost-effective way. Systems must be carefully planned against individual heating and cooling systems to minimise double supply, and should be promoted via mechanisms aligned with national energy policies, as well as the broader national policy context and the organisational set-up of the sector.

Key sponsors should be identified, such as one ministry to ensure proper coordination of efforts across the many stakeholders. Key stakeholders, from ministries, the power sector, and other sectors key to the implementation, should all be involved in the implementation process.

Tools, guidelines, methods and management of the comprehensive assessment (October 2013)

MS are required to assess the potential for CHP and district energy under Article 14(1) of the EED. While some reported having made progress in implementing Articles 14 and 15, most CA participants said their greatest challenge was meeting the various deadlines. Other barriers were a lack of resources and uncertainty about the process. Tools and methods for undertaking comprehensive assessments and cost-benefit analyses existed, but they were not immediately transferable across MS due to language and other issues. Several participants also expressed concerns about data availability. Regarding district cooling (DC) however, there did seem to be scope for experience sharing between MS.

The context for implementing Articles 14 and 15 also varied across MS. While some had implemented a large share of their CHP and district heating (DH)

potential and had regulatory and administrative frameworks in place, others did not. In MS with a considerable existing DH and CHP sector, assessments will have to address the potential for keeping existing customers connected while increasing EE.

Several MS said they planned to outsource at least part of the work of undertaking the comprehensive assessment. Whichever approach is chosen, it will be important to make effective use of existing experience, tools and methods across MS.

Efficiency in Energy Supply (March 2014)

A comprehensive assessment of the potential for CHP and district energy can provide a solid basis for developing efficient and cost-effective policies to implement EE policy. It may also "open the market" through the identification of technical potential, economic viability potential, and to some extend the financial viability potential for increased use of CHP and DHC.

The level of implementation of the comprehensive assessment varied significantly, however, with the majority of MS still in the early stages at the time of the working group. Methods also differed considerably. Some MS had applied analytical tools to assess energy demand, while others used surveys or actual meter readings. Many MS still faced major challenges with lack of data and methodological clarity. From a timing perspective, most said the most urgent issue was to develop the administrative framework for installation-level cost-benefit analysis (CBA), due to be in place by June 2014. The end of 2015 deadline for the comprehensive assessment was also considered a major challenge. One tool for CBA analysis is under development by the Joint Research Centre for DG-ENER.

Since climatic, political and regulatory differences mean contexts differ significantly between MS in the South, East and Central/Northern/Western parts of the EU, the key challenges for each region must be addressed separately. MS in the South considered the potential for CHP and DHC to be limited, and assessment of the potential was hampered by a lack of data. Eastern European MS had precise data from existing systems, but other issues concerning the comprehensive assessment remained. Most MS in other regions had GIS-based mapping tools in place.

Many MS have faced a decline in electricity production from CHP following an increase in natural gas prices and a reduction in electricity prices. Also, increased electricity production from renewable energy systems may in future reduce the economic viability potential for CHP. The main focus in MS at the time of this working group was therefore on the promotion of biomass-based CHP.

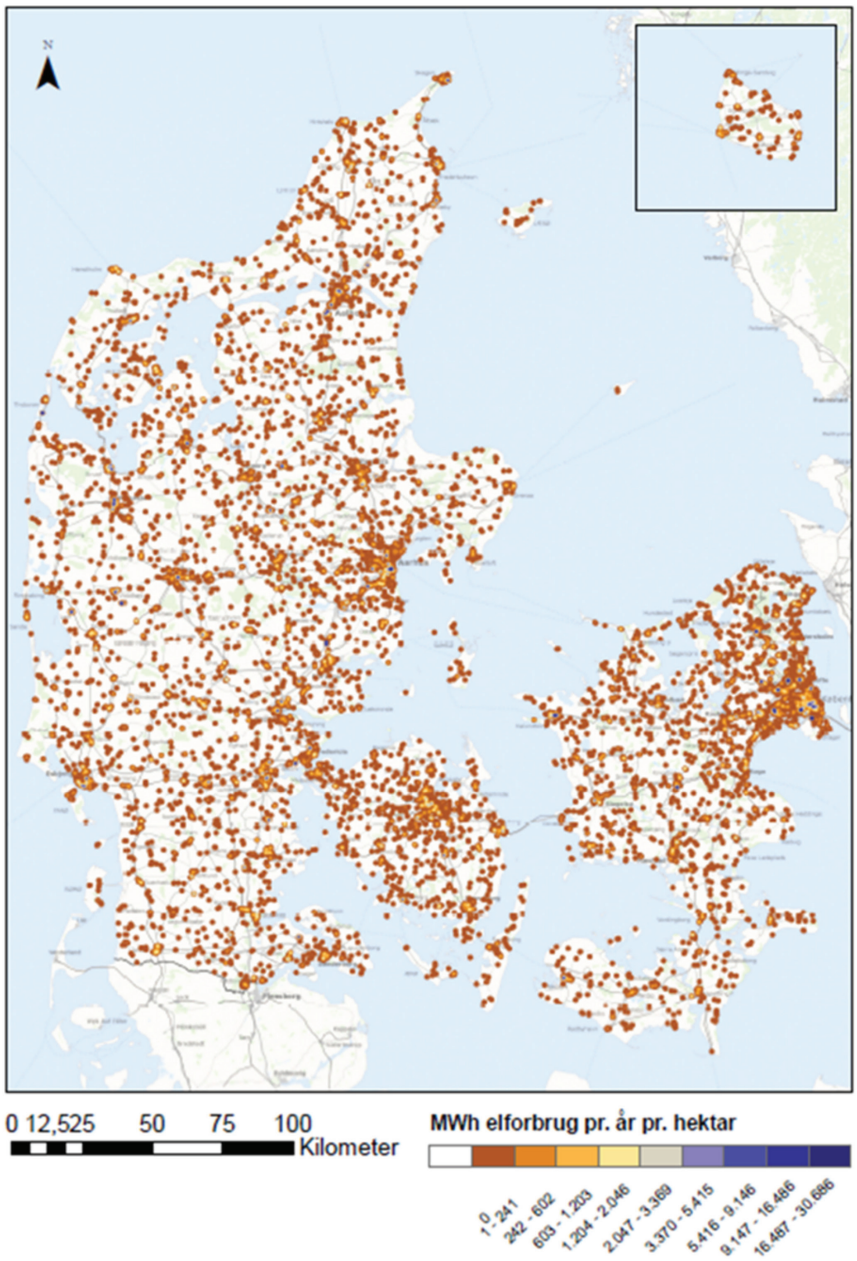
Cooling potential assessment, Denmark

Danish Energy Agency has undertaken a comprehensive assessment of the potential for district cooling and recovery of waste heat from cooling systems.

A GIS mapping was done using building and enterprise registries in combination with detailed mapping of energy demand for cooling by industry sectors.

District cooling costs and benefits were compared with those of individual cooling systems to assess the potential for district cooling.

The analysis showed a district cooling potential of 40% of total cooling demand. Most of the excess heat from cooling could be profitably recovered for heating purposes.



Member State presentation can be downloaded from:
www.ca-eed.eu/good-practices/member-state-presentations/chp/articles-14-15

8 Energy efficiency obligation schemes, monitoring impacts of eligible measures

Overview

Article 7 of the EED requires MS to set up an EE obligation scheme for energy suppliers and/or distributors that achieves yearly end-use energy savings of 1.5%. As an alternative, MS can implement other policy measures that lead to the same amount of savings. Combinations of these two options are also permissible. The examples of acceptable alternative measures mentioned in Article 7(9) of the EED include energy and CO_2 taxes that have the effect of reducing end-use energy consumption. MS must also set up a monitoring and verification system to ensure savings are correctly accounted for.

Implementation of Article 7 (March 2013)

CA participants had to report which measures and instruments will be introduced in their country to implement Article 7. In most MS there was a plan to use a combination of 2 or more of the 4 eligible options according to Article 7(2) (energy saving target adaptation) to reduce the energy saving target of Article 7 by a maximum of 25%. The most commonly selected option was counting early actions towards the target, closely followed by starting with a lower yearly target and incrementally increasing this to 1.5%, and excluding industrial activities subject to the EU ETS from the calculations.

Most MS planned to implement Article 7 with alternative measures (as per Article 7(9)). Nine planned to use a combination of EE obligations and alternative measures, while 4 MS planned to comply through EE obligations only. Planned alternative measures ranged from subsidy schemes to audit schemes and energy taxes. Most MS planned to use a mix of measures.

The main challenges identified in Article 7 implementation were budgetary constraints, tight implementation timelines, and political agreement on the measures. CA participants also saw future challenges arising from: final political decisions on measures, and the finalisation of legislation; financing of the necessary EE measures; technical issues concerning monitoring and reporting; setting up new schemes, and adaptation of existing schemes.

Although MS have notified the Commission on their implementation plans for Article 7, some issues remained. These mainly concerned technicalities and the further process of notification and implementation. Double counting remained an important problem in many MS.

The CA participants also stressed that a final decision by the European Commission as regards the eligibility of measures, as well as on the interpretation of the additionality requirement (e.g. renewable energy sources, refurbishment of buildings) would ease the implementation process in MS.

Monitoring and verification of energy savings at low administrative costs (October 2013)

Several paragraphs of Article 7 (in particular 6, 7 and 10) and Annex V require proper control, monitoring and verification systems to be in place. It is important to find ways to implement these at low administrative costs.

Elements identified by CA participants that could reduce administrative burdens in these schemes included: involving all relevant actors in the monitoring process; using standardised report procedures and templates; having clearly defining eligible measures and documentation requirements; using standard values for calculation where possible; checking the majority of measures on paper rather than on-site; and trying to make as much of the process as possible automatic via on-line tools. It was stressed that all solutions for monitoring, control and verification of EE schemes would have to balance the need for accuracy of calculations and process with administrative costs. MS were also interested in exchanging information on existing schemes.

Good practice example

A CA Bulgarian representative said:

"We have taken an idea from Austria concerning the implementation of Article 7. They have a joint scheme between energy suppliers and industrial enterprises that could also work in Bulgaria. We are currently working on the idea and will most likely propose a very similar scheme to our own Ministry."

Good practice example

A CA Lithuanian representative said:

"We had some questions about obligations systems. We asked the Danish Energy Agency (DEA), and a few days later we flew to Copenhagen. It was a very enlightening meeting that gave us a better understanding of how their obligation system works, and we learnt what we can do and what not to do. As a result the obligation system in Lithuania is based on the Danish model, but adapted to our own circumstances."

Measuring energy savings from energy taxes (March 2014)

Member States had different plans for reporting savings from the application of energy and CO_2 taxes for the implementation of Article 7. 10 MS planned to calculate savings from energy taxes. Others had not ruled out this possibility. But the main challenge concerning the use of energy and CO_2 taxes for Article 7 implementation was seen as the development of a sound energy savings calculation methodology. Some MS already had a well-established methodology.

The main issues to be taken into account when calculating energy savings from energy taxes were: excluding double counting of savings; differentiating between short and long-term effects (the latter can only be partially taken into account as the obligation period for Article 7 only runs until the year 2020); taking into consideration substitution effects between energy carriers due to tax/price increases; and taking inflation into account.

Good practice factsheets

Good practice factsheets for the topic Measuring Impacts can be downloaded from: www.ca-eed.eu/good-practices/good-practice-factsheets/measuring-impacts

Abbreviations used

CA EED	Concerted Action for the Energy Efficiency Directive
CA ESD II	Second Concerted Action for the Energy Services Directive
CHP	Combined Heat and Power (also known as cogeneration)
DH	District Heating
DHC	District Heating and Cooling
DR	Demand response
DSM	Demand side management
EE	Energy-Efficient / Energy Efficiency
EED	Energy Efficiency Directive
EEEF	European Energy Efficiency Fund)
EEPP	Energy Efficient Public Procurement
ELENA	European Local Energy Assistance
EPBD	Energy Performance of Buildings Directive
EPC	Energy performance contracting
EPC	Energy performance contracts
ESCO	Energy services company
ESD	Energy Service Directive
JESSICA	Joint European Support for Sustainable Investment in City Areas
LCA	Life-cycle assessment, or life-cycle analysis
MS	Member States (in this report, all CA EED participants including Norway)
NEEAP	National Energy Efficiency Action Plan
PPP	Public Private Partnerships
PS	Public Sector
RED	Renewable Energy Directive
SC	supply contracting
SCF	Structural and Cohesion Funds
SEAP	Sustainable Energy Action Plan
SMEs	Small and Medium-sized Enterprises
TA	Technical Assistance
WG	Working Groups

The Concerted Action for the Energy Efficiency Directive (CA EED) was launched by Intelligent Energy Europe (IEE) in spring 2013 to provide a structured framework for the exchange of information between the 28 Member States and Norway during their implementation of the Energy Efficiency Directive (EED).

For further information please visit **www.ca-eed.eu**
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