

The Energy End-use Efficiency and Energy Services Directive (2006/32/EC)

The purpose of this Directive is to encourage energy efficiency through the development of a market for energy services and the delivery of energy efficiency programmes and measures to end users. The Directive covers most forms of energy sold to end users, including transport fuels.

“ This Directive is a welcome addition to the family of European Directives dealing with the use of energy, and it is often referred to as the Energy Services Directive and sometimes as the Energy Efficiency Directive. Rather than focusing on specific technologies or measures, the new Directive addresses actors and institutions and the way markets for energy and services function.

It will thus complement and improve the implementation of existing EU energy efficiency legislation, including the Directives on energy performance of buildings, on combined heat & power and on energy labelling of appliances.



The End-use Efficiency and Energy Services Directive¹ was adopted by the European Council on 14 March and formally entered into force on 17 May 2006. Member States have two years to transpose the Directive into national law.

The Directive defines and sets savings targets on a national level, and will require action by each Member State of the European Union. Member States must achieve a minimum annual energy savings target of 9% by the ninth year in the period from 2008 to 2016 (see fact box). In line with

this, each national government will have to produce energy efficiency action plans (EEAPs) in 2007, 2011 and 2014. In their first EEAP, each Member State will have to report on how they will reach their targets and in the two subsequent plans they will also have to report on what has been achieved.

Although the targets are indicative and thus not mandatory, Member States have a clear legal obligation to adopt and aim to achieve the target, using appropriate cost-effective energy services and other energy efficiency improvement measures.

Besides the energy efficiency targets, the Directive sets the framework for Member State activities and measures in a number of areas, such as financing, metering, billing, promotion of energy services, and obligations for the public sector. Member States are required to ensure that their public sector organisations play an exemplary role - in which case firm energy efficiency criteria should be part of the product purchasing and investment decisions.

Energy companies represent another important sector. For the first time, Member States are required to place energy efficiency obligations on energy distributors or retailers although there are a number of options which they can utilise, ranging from involving the energy distributors and/or the retail sales companies in energy efficiency activities, through to letting the energy distributors and/or suppliers contribute to funds for energy efficiency. These obligations, while placed on energy companies, do not necessarily require activities on the part of energy companies, which may be carried out by other market actors.

Measurement and verification of energy savings achieved will be vital to the implementation of the Directive. A committee with Member State government representatives is to be established to assist the Commission in the further development of a harmonised bottom-up/top-down system to measure the achievement of the energy savings targets.

ecee welcomes this Directive but stresses that the Member States' ambition level in the implementation of the Directive is key to the success.



Background to the Directive

The origins of the Directive date back to the year 2000 when the European Commission set out an action plan to promote energy efficiency within the EU². At that time the Commission proposed a target for the Community as a whole, this being a 1% per year improvement in energy intensity over and above that which would otherwise have been attained. This action plan was broadly supported at the time by the two European law-making institutions: the European Council and the European Parliament.

The Energy End-use Efficiency and Energy Services Directive was eventually presented by the Commission at the end of 2003³, as a means to improving energy efficiency throughout the EU. The ultimate aim of this Directive is to promote energy efficiency while allowing Member States considerable freedom in how the energy savings are achieved.

Under the Directive, Member States will plan to achieve a minimum annual energy savings target of 9% by the ninth year in the period from 2008 to 2016. Each national government will have to produce separate energy efficiency action plans (EEAPs) in 2007, 2011 and 2014. Member States will have a period of two years to transpose the Directive into national law. A three-year intermediate energy savings target must be developed by each MS.

The energy savings targets are indicative rather than mandatory and therefore not legally binding on Member States. However, by fulfilling the other requirements set out in the Directive and by implementing the other Directives in the field of energy efficiency, the Member States should be on the right track to reach the target set out in this Directive. The first EEAP from each Member State must be submitted to the Commission by 30 June 2007. Progress reports will be included in the final two EEAPs and if the reports show that the Member States are falling short in meeting their targets, additional measures may be proposed by the Commission.

ecee's position – pointers for success

ecee has defined some key points the organisation believes important for the success of this Directive. ecee believes there is a need for:

- Stricter savings targets than the agreed 9% target over 9 years (or 1% cumulative per annum) among the EU-25. ecee therefore welcomes the more ambitious targets set out by some Member States and encourages others to follow suit.
- League tables to be published by the European Commission showing those countries which are making the best progress on energy savings and those lagging the most.
- Regular monitoring of progress on the implementation of the Directive, which is publicly available to all stakeholders.
- A prompt start and early conclusion to the committee on harmonised methods for bottom-up calculations and energy efficiency indicators.
- Wide implementation of 'smart meters' in view of the benefits that this can bring to householders, electricity retailers and distributors and the environment.
- Clear evidence that the public sector (at national, regional and local levels) in all Member States is leading by example in the specification and procurement of goods and services which proactively encompass the sustainable energy philosophy.
- Removal of the barriers to the continuing development of Energy Services.

Time frame and historical background

The process to develop a new Directive is a long and painstaking process involving the Commission, the Member States (through the Council) and the European Parliament. In addition, citizens and stakeholders can provide input. Eventually, the final Directive is a compromise between a number of interests and ambitions.

- 7 December 1998 – The European Council invites the European Commission to come forward as soon as possible with a proposed action plan for energy efficiency in the Community.
- 26 April 2000 – Action plan to improve energy efficiency in the Community adopted by Commission.
- 10 December 2003 – Proposed Directive adopted by the European Commission.
- 7 June 2005 – European Parliament votes to adopt the Directive at its first reading with 99 amendments.
- 27 September 2005 – The Council of the European Union's Common Position forwarded to the European Parliament – it diverges significantly from the EP's position.
- 30 November 2005 – Informal Compromise agreement reached between the Council and EP on the amended Common Position.
- 13 December 2005 – The EP votes and adopts the agreed draft Directive in the second reading.
- 2 February 2006 – EC announces that it accepts in full all 49 amendments adopted by the European Parliament.
- 14 March 2006 – Council adopts the agreed 2nd reading draft Directive.
- 5 April 2006 – Council and EP jointly and formally sign Directive 2006/32/EC.
- 17 May 2006 – Directive enters into force
- 30 June 2007 – Member States have to submit their first energy efficiency action plans (EEAPs).
- 1 January 2008 – Deadline for the EC to review the first EEAPs.
- 17 May 2008 – Deadline for Member States to transpose Directive into national law.
- 30 June 2011 – Deadline for the second EEAPs to be submitted.

The exemplary role of the public sector

The predominant culture of public procurement to select the investment with the lowest initial cost rather than lowest life-cycle cost is a significant barrier to increased energy efficiency in the public sector. The separation between budgets for investment and operation makes it difficult for public sector managers to invest in energy-efficient technology, even if a more expensive technology would be more profitable to own and operate over time. What needs to be encouraged is a culture of life cycle cost prioritisation.

According to the Directive, the Member States' public sector bodies and agencies are obliged to provide an exemplary role in improving energy efficiency. For example, they can choose to do this by cost effective energy efficiency measures across their own building stock, transport fleets, use of equipment, etc and publish investment and purchasing guidelines on energy efficiency and energy savings in public sector contracting. The latter will assist energy efficiency being used as an assessment criterion in competitive tendering for public contracts.

A more energy efficient public sector will not only lead to savings and lower costs in the sector itself. The public sector represents a large market, and if its purchasing power is directed towards more efficient technologies, this will have an impact on the technologies offered on markets beyond the public sector as well, thereby making it easier to reach the targets of other sectors as well.

“The Directive must and can kick off a real energy efficiency offensive in the Member States.”

Mechtild Rothe MEP, Rapporteur, European Parliament.

Involving energy companies and expanding energy services

For the first time, Member States are required to place energy efficiency obligations on energy distributors or retailers although there are a number of options which they can utilise, ranging from involving the energy distributors and/or the retail sales companies in energy efficiency activities, through to letting the energy distributors and/or suppliers contribute part of their revenues to funds for energy efficiency. These obligations, while placed on energy companies, do not necessarily require activities on the part of energy companies, which may be carried out by other market actors e.g. independent ESCOs.

By addressing energy companies, the Directive is expected to help to correct the institutional barriers resulting from the continued practice of selling energy in the form of kWh, instead of the useful results of efficient heating and cooling, lighting and motive power, i.e., the services or outcomes which the consumer actually wants. The company delivering the service will thus have an incentive to increase end-use efficiency, and not only the efficiency of the supply system up to the energy meter.

Removal of these barriers should help ensure that energy companies offer and actively promote energy efficiency

Transportation

While the Directive is not very specific on transportation, it does include companies that sell transport fuels in the obligations placed on energy companies. Member States thus have an option to include transportation in the energy efficiency action plans.

services, either through their own activities or through other commercial actors. This would complement and extend the energy efficiency obligations already imposed on energy suppliers and distributors in some Member States.

Energy performance contracting and third-party financing

The Directive does not only promote energy services provided by energy companies. The Directive also encourages the use of instruments such as energy performance contracting and third-party financing, and requires Member States to remove any existing regulations that restrict or impede such contracts.

Energy performance contracts operate when an ESCO (Energy Services Company) provides the supply, installation and sometimes the management of energy efficient technologies as a complete package to the end user to achieve energy savings. The resulting energy savings are used to pay for the investment. The main element of this type of contracts is the energy performance guarantee provided by the ESCO, which helps to reduce the risk perceived by the end user.

In order to further optimise energy performance, a profit sharing mechanism can be established, where profits from increased energy savings are typically shared between the end-user and the ESCO. With this mechanism, both parties have an incentive to maximise the savings.

Third-party financing is another possible component of this type of contract. Here, the service supplier also assists in locating financial solutions.

“Energy efficiency is one of the main priorities of this Commission. That will remain so throughout our mandate period. This new Directive is expected to be a valuable tool for achieving that goal.”

Andris Piebalgs, European Commissioner responsible for Energy and Transport.



Energy audits, funds and metering

In addition to promoting energy services the Directive is addressing a number of other activities and services.

Energy audits

Member States are required to ensure the availability of independent and high quality energy auditing, including those for smaller domestic and commercial customers. In effect, this means that there should be an expansion of the work of energy auditing specialists who analyse the energy use of customers and make recommendations for energy efficiency improvements. The quality of energy audits should also increase.

Energy efficiency funds

The Directive encourages the establishment of energy efficiency funds by the Member States. If a Member State decides to establish such a fund it must be open to all market actors and there are several provisions regarding how the funds should be used. This includes promotion of energy auditing and financial instruments for energy savings and the coverage of end-use sectors with higher transaction costs and higher risks.

Metering

The first electricity meters were developed over 100 years ago, mainly for the benefit of the power companies so that they could bill their customers more accurately. In recent years 'smart' meters have been developed. Limited international experience to date indicates that if domestic consumers had a smart meter with a clearly visible remote display showing their energy consumption in money terms and possibly against past performance rather than just cumulative kilowatt-hours, energy savings in the range 3-8% would be attainable on a long-term basis.⁴ These savings occur mainly due to the fact that consumers get more or less instant feedback on their energy use, and thus have a better possibility to take action to lower their energy costs.

However, smart meters have a number of additional potential benefits. If they are sophisticated enough, they can open up for more flexible time-of-use tariffs and allow the utilities to manage peak loads in a more responsive way. Smart metering systems can also open up for so-called smart electricity grids, that allow electricity from photovoltaic or other forms of distributed generation to be fed into the grids.

Smart or intelligent meters are also typically capable of being read remotely by the energy supplier (through advanced communication systems), lessening the chance of inaccurate readings and removing the need for estimated bills.

In the Netherlands, a KEMA study for the Dutch government indicates a net present value gain of 1.3 billion if all household meters in the country were changed to smart meters⁵. The Dutch government has thus decided to replace the meters of all 7 million households within a six-year period starting in September 2006⁶.

The Directive requires Member States to ensure that meters and systems measure customers' actual energy consumption both accurately and frequently; and that billing is informative, sufficiently frequent and based on actual energy consumption.

Measurement and verification of energy savings

Measurement and verification of energy savings has always been a key issue for any company or public body that spends resources on energy efficiency activities. By introducing savings targets and obliging Member States to take action and report their actions back to the Commission, the new Directive has lifted this issue right to the top of the European energy policy and research agenda.

Each Member State will be required to appoint one or more (new or existing) sector agencies to oversee implementation of the Directive.

A significant part of the Directive is concerned with the monitoring and verification of the end-use energy savings.

Energy saving targets

According to the Directive, Member States "shall adopt and aim to achieve an overall national indicative energy savings target of 9 % for the ninth year of application of this Directive". The Directive thus only specifies the final target, but also requires Member States to define for themselves an interim target to be met after three years.

In practice, it is believed that the final target will translate into an average cumulative savings target of 1% per annum. Thus the savings needed would be 1% in first year, 2% in the second year, and so on, until 9% annual savings is achieved in the ninth year.

In the first Energy Efficiency Action Plan (EEAP) to be submitted by 30 June 2007, each Member State will announce a firm energy savings target and also submit a plan where they describe how they plan to achieve the intermediate three-year target and the ninth-year overall target by implementing different energy efficiency improvement measures. Although the targets are

indicative, and thus not legally binding, MS have a clear obligation to adopt and aim to meet the target.

The target will have to be expressed in terms of an amount of energy (e.g. GWh) that should be saved as a result of these measures. Member States can of course adopt a stricter target than the average 1% per annum in their EEAPs. For example, the Netherlands has indicated that it is making a binding commitment to an annual energy saving target of 1.5%, whilst Denmark is committed to a 1.7% target.

The target is fixed for the total duration of this Directive. It will be based on the average annual domestic energy consumption (unadjusted) for the most recent five calendar years previous to the implementation of the Directive. The targets are not affected by economic growth during the nine years, so that the actual energy used by a Member State could well increase even though it achieved the set energy savings target.

The Directive points towards the Energy efficiency and demand side management evaluation guide produced by the International Energy Agency⁷ and the International Performance and Measurement Verification Protocol (IPMVP)⁸ (see 'related publications' below).

Verification of the measurements must be carried out by a third party, such as a certified consultants or another market player.

Measuring the effectiveness of existing EU Directives in promoting energy efficiency has so far been concentrated on the 'top down' approach, through retrospective indicators such as energy consumption per unit of GDP. The alternative, and complementary, approach promoted in this Directive is a 'bottom up' methodology, based on measuring the end-use energy savings resulting from a specific energy service or energy saving programme. According to the Directive, the use of bottom-up calculations of energy efficiency improvement measures will have to increase significantly during the nine-year period of the Directive. For example, the additional energy savings achieved from an incentive programme that provides low-energy compact fluorescent lamps (CFLs) or energy efficient motors to end users can be calculated and independently verified, using reasonable lifetimes and appropriate baselines.

The Commission, assisted by a group of experts, will develop a harmonised method for calculating improvements in energy efficiency, including benchmarks. The European Odyssey project⁹ has been developing and refining the indicator (or top-down) approach, whereas the MURE project¹⁰ has been developing bottom-up models. The Commission and member States are funding a new initiative to further develop bottom-up and top-down methods, as well as integrated methods that use both approaches when appropriate and minimises double counting. The methodology has to be developed and in place by the end of 2007.

Key issues in implementing the directive

While the energy end-use efficiency and energy services Directive is a very welcome addition to the European policy scene, a number of areas are open to interpretation and may affect how ambitious Member States are in implementing the Directive. These include:

1. The targets are not legally binding. Although Member States have a clear legal obligation to adopt and aim to achieve the target, they face no legal consequences if they fail to meet the target. However, the national energy efficiency action plans will provide the Commission with information on whether or not Member State measures are ambitious enough, under normal circumstances, to meet the target.
2. Energy savings from measures initiated pre-1995, and as far back as 1991, may be taken into account if they still give measurable and verifiable results after 2008. There is a risk that Member States commit extensive effort to calculate the present effects of legislations, tax schemes and/or running energy efficiency programmes set up during the 1990s, instead of proceeding with additional measures from now on, in accordance with the spirit of the Directive. The Commission, with the assistance of the commit-

“There was no ambiguity in the European Parliament’s decision about the need for an energy efficiency offensive. The urgent need for this has become even more obvious recently, with massive oil price increases and devastating environmental disasters.”

Mechtild Rothe MEP, Rapporteur, European Parliament.

tee established for this purpose, will need to be vigilant in assessing such claims.

3. The measurement and verification methodology must be sufficiently robust and well defined. If it isn't, there is a risk that Member States may rely on inflated energy intensity improvement calculations for their top-down evaluations to meet the indicative target, rather than actually improving their overall energy efficiency; similarly, with the “bottom-up” evaluations care will need to be exercised that “business as usual” activities on energy efficiency measures are not underestimated and labelled as “new activities”.

4. The public sector is required to fulfil an exemplary role, with guidelines to be provided from Member States on energy-efficient public procurement. These guidelines need to be specific, and the right support structure must be offered to make it easy for public sector organisations to actually carry out energy efficiency activities. Otherwise, there is a risk that the predominant culture of procurement to select the investment with the lowest initial cost rather than lowest life-cycle cost will continue.

5. Member States are required to ensure a level playing field for energy services. A level playing field may be difficult to achieve if the Government and/or the energy regulator are promoting competition on the basis of lowest unit energy prices alone.

6. Member States are required to remove legislation and regulations that restricts the use of financial instruments for energy savings. There are a number of social precautions (e.g.: prevention of tie-in clauses with energy suppliers) that may prevent the use of the full range of financial instruments. It is important that Member States look at such precautions comprehensively, and critically review them, to check if they are really necessary and not in fact working against consumers' interests.

7. Member States are required to ensure the availability of efficient, independent, high-quality and competitively priced energy audit schemes. But energy audits will only lead to energy savings if action is taken as a result (It should be noted that the Directive provides stronger obligations for the public sector: the energy audit provision for the Public Sector requires that the cost-effective recommendations resulting from the audits also be implemented.)

8. Member States are required to ensure that energy consumers have individual meters that accurately reflect the energy consumption and provide information on actual time of use, where 'proportionate in relation to the potential energy savings'. Benefits of “smart meters” accumulate to customers, energy suppliers and energy distributors. However, for each individual actor, these benefits are sometimes perceived as marginal, but collectively they more than justify moving from obsolete technology. (See section on metering.)

Summary and conclusions

The Directive will complement and improve the implementation of earlier Directives in the field of energy efficiency, such as the Directive on Energy Performance of Buildings.

Recent rises in oil and natural gas prices are largely seen as outside the control of national governments. There is no doubt that energy efficiency and real energy savings will lessen the economic burden of energy costs. This factor should provide encouragement for Member States to be enthusiastic in implementing this Directive.

The 9% energy savings target in practice translates to a cumulative annual energy savings target of 1%. This should be a minimum. For example, the Netherlands has already indicated that it is making a binding commitment to an annual energy saving target of 1.5%, whilst Denmark is committed to a 1.7% target.

The political distance between the Member States on the one side and the European Parliament and the Commission on the other was too large to introduce binding energy savings targets in the final version of this Directive. Moreover, it is difficult to introduce binding targets before a harmonised system for measuring and verifying energy savings is in place. Whether the next (new or amended) Directive, which will have to be tabled by the Commission in 2014 at the latest, will contain binding targets, will depend on the level of ambition of the Member States' implementation of the current Directive. In addition, other external factors like new evidence of accelerated climate change, new targets post the first Kyoto budget period of 2008-2012 and the development of oil prices will all play a role in this coming debate.

Mechtild Rothe MEP, the European Parliament's rapporteur for the Directive says: "This commitment demonstrates two things: first, that countries which have already done a great

deal with regard to energy efficiency and energy savings still have great potential for cost-effectiveness, and second, that those countries, in particular, which already have experience with energy efficiency measures recognise this as a win-win situation and are therefore sticking with it and even increasing their efforts."

Measurement and verification of energy savings achieved will be vital to the implementation of the Directive. The bottom-up model is already in use in the UK, Ireland, Denmark, Finland, Italy and France. Much is up to Commission and the new committee that will assist the Commission in producing harmonised methods for bottom-up calculations and energy efficiency indicators.

The Directive will provide the impetus for Member States to increase their support for energy end-use efficiency measures and, if the current high fuel costs continue, it will only make consumers more receptive to ways in which they can reduce their expenses through saving energy.

Sources and notes

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- 2. Communication from the Commission to the Council, the European Parliament, the Economic and Social Committee and the Committee of the Regions - Action Plan to improve energy efficiency in the European Community COM/2000/0247 final.**
- 3. COM (2003) 739 2003/0300/COD. Proposal For A Directive of the European Parliament and of the Council on energy end-use efficiency and energy services**
- 4. A review of smart metering studies by Gill Owen and Judith Ward – 'Smart meters: commercial, regulatory and policy drivers' March 2006, showed energy savings of 3% observed in Northern Ireland and 8% in Norway. For more information visit www.sustainabilityfirst.org.uk/publications.php**
- 5. An English summary of the study with a recommendation is found in 'Implementing smart metering infrastructure at small-scale customers: Recommendation.' SenterNovem, October 2005. FAS No. 1-2893 (SenterNovem: 4150).**
- 6. Personal Communication: Fred Koenis, KEMA Consulting Europe, 23 May 2006.**
- 7. Evaluation Guidebook on the Impact of Demand-Side Management and Energy Efficiency Programmes for Kyoto's GHG Targets <http://dsm.iea.org/NewDSM/Work/Tasks/1/task1.eval.asp>**
- 8. The International Performance Measurement and Verification Protocol (IPMVP). <http://www.ipmvp.org>**
- 9. ODYSSEE – Energy Efficiency indicators in Europe. ODYSSEE is a joint project between ADEME, and all energy efficiency agencies in the EU-15 and Norway, co-financed by the EI-E programme of the European Commission. The ODYSSEE project relies on a comprehensive database that contains, on the one hand, detailed data on the energy consumption drivers by end-use and sub-sector and, on the other hand, energy efficiency and CO2 related indicators. <http://www.odyssee-indicators.org/>**
- 10. MURE – Mesures, d'Utilisation Rationnelle de l'Energie (Measures for energy efficiency). The MURE project contains a database of measures and best available technologies for all sectors, as well as cross-cutting measures. <http://www.mure2.com/home.shtml>**

The European Council for an Energy Efficient Economy (ecee)

is a non-profit, membership-based European NGO. The goal of ecee is to stimulate energy efficiency through information exchange and co-operation. To facilitate this, ecee provides an information service through its website and e-mail newsletter, arranges workshops and conferences, and takes active part in the European Policy making process.

One of ecee's principal events is the Summer Study, held for five days every odd year in the early summer. It is Europe's primary event for cross-cutting discussions on energy efficiency. The Summer Study attracts more than 250 participants from a wide range of backgrounds.

ecee and its summer study offers governments, industry, research institutes and citizen organisations a unique resource of evidence-based knowledge and access to reliable information.

ecee promotes the understanding and application of energy efficiency in the energy research, policy and commercial organisations. It offers membership for both individuals and organisations.

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