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Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

**on energy efficiency and amending and subsequently repealing Directives 2004/8/EC
and 2006/32/EC**

(Text with EEA relevance)

EXPLANATORY MEMORANDUM

1. CONTEXT OF THE PROPOSAL

1.1. Grounds for and objectives of the proposal

The EU has set itself the objective of achieving 20% primary energy savings in 2020¹ and has designated this objective as one of the five headline targets of the Europe 2020 Strategy for smart, sustainable and inclusive growth².

Latest estimations made by the Commission, also taking into account the national energy efficiency targets for 2020 that Member States have set in the context of the Europe 2020 strategy, suggest that the EU will achieve only half of the 20% objective in 2020³. The European Council⁴ and the European Parliament⁵ have urged the Commission to adopt a new ambitious strategy on energy efficiency with determined action to tap the considerable potential.

To provide a new impetus for energy efficiency the Commission put forward, on 8 March 2011, a new Energy Efficiency Plan (EEP) setting out measures to achieve further savings in energy supply and use.

This legislative proposal transforms relevant elements of the EEP into binding measures. The main purpose of this legislative proposal is to make a significant contribution to meeting the EU's 2020 energy efficiency objective. In order to be successful, it is important that the proposal is promptly adopted and implemented in the Member States.

The proposal also looks beyond the achievement of the 20% objective and seeks to set a common framework for the promotion of energy efficiency in the Union beyond 2020. The Proposal features as a strategic priority in the Commission Work Programme for 2011.

1.2. General context

With the backdrop of growing EU imports of energy at rising prices (amounting to €332 billion in 2007), access to energy resources can in the medium term seriously compromise EU economic growth. This explains why energy efficiency is one of the main elements of the Europe 2020 flagship initiative for a resource-efficient Europe⁶. Energy efficiency is also the most cost-effective and fastest way to increase security of supply, and is an effective way to reduce the greenhouse gases emissions responsible for climate change. As outlined in the Commission Communication 'A Roadmap for moving to a competitive low carbon economy in 2050'⁷ energy efficiency can help the EU achieve and even outperform the EU's greenhouse gas emission reduction target.

Making the EU economy more energy efficient will also have positive impacts in terms of economic growth and job creation. Energy savings free financial resources that could be reinvested elsewhere in the economy and can help alleviate public budgets that are under constraint. For individual citizens energy efficiency means paying less on their energy bills.

¹ 7224/1/07, REV 1.

² COM(2010) 2020/

³ SEC(2011)277.

⁴ EUCO 2/1/11.

⁵ 2010/2107(INI).

⁶ COM(2011)21.

⁷ COM(2011)112.

Also, fuel poverty can be tackled strategically by means of energy efficiency improvement measures. Finally, producing more with less energy should improve EU industries' competitiveness and place them in a leadership position in the global markets for energy efficiency technologies. Energy efficiency and savings benefit the EU economy as a whole, the public sector, business and private individuals. For these reasons, the European Energy Strategy 2020 identified energy efficiency as one of the key priorities of EU energy policy for the following years.

1.3. Existing provisions in the area of the proposal

Two Directives: the Cogeneration Directive (2004/8/EC, CHP Directive) and the Energy Services Directive (2006/32/EC, ESD)⁸ have an overlapping scope with this Proposal. Both of these Directives have failed in fully tapping the energy saving potential. Therefore, it is proposed that these two Directives are repealed at the moment of entry into force of the new Directive, except for Articles 4 (1) to (4) and Annexes I, III and IV of the ESD, which will remain in force until 1 January 2016.

Other provisions overlapping with the provisions of the new Directive are Article 9(1) and (2) of Directive 2011/30/EU on energy labelling⁹, which will be repealed with effect from the entry into force of the new Directive.

1.4. Consistency with other policies and objectives of the Union

This proposal is entrenched in the Europe 2020 Strategy for smart, sustainable and inclusive growth¹⁰, as the EU's 20% energy efficiency objective is part of one of the five headline targets under this Strategy. Moreover, it is one of the proposals foreseen in 2011 to deliver on one of the seven flagship initiatives of the Strategy, namely the Europe 2020 flagship initiative for a resource-efficient Europe¹¹. It is consistent and complementary with the existing EU climate policy.

An effect of the decreased energy consumption aimed at by this proposal will be that the share of renewable energy in the generation mix increases. This will make it easier and cheaper for Member States to reach their targets for the share of energy from renewable sources set by Directive 2009/28/EC on the promotion of the use of energy from renewable sources¹².

2. CONSULTATION OF INTERESTED PARTIES AND IMPACT ASSESSMENT

2.1. Consultation, data collection and use of expertise

The proposal has been developed on the basis of a broad range of contributions from Member States and interested parties, provided on various occasions including general online public consultation¹³. A broad consultation exercise was also launched in January 2011 by the working groups of the Bucharest forum on sustainable energy (which include Member State representatives and stakeholders)¹⁴. Comprehensive analysis of the impacts of the various options proposed was carried out using the results of three models and of numerous studies.

⁸ OJ L 144, 27.4.2008, p. 64.

⁹ OJ L 153, 18.6.2010, p. 1.

¹⁰ EUCO 13/10.

¹¹ COM(2011)21.

¹² OJ L 140, 23.4.2009, p. 16.

¹³ For more details see section 1.2 of the accompanying IA and in particular Annexes I and II.

¹⁴ The draft reports available at: <http://ec.europa.eu/energy/efficiency/bucharest>.

The analysis studied the economic, social and environmental impact of the various options while taking into account the subsidiarity and proportionality principles.

2.2. Impact assessment

The impact assessment (IA) explores a number of options organised in three levels:

- The **first-level policy options** analyse various ways to improve the current policy framework. This analysis focuses primarily on the question of whether the current approach of the ESD regarding target setting should be extended until 2020, whether it should be complemented by national energy savings targets to achieve the EU 20% objective and if so, whether such national targets should be binding or merely indicative.

The analysis concludes that it is appropriate to maintain the ESD targets on end-use sectors until their deadline in 2016, but to reach the 20% energy efficiency target they need to be complemented with more ambitious energy savings targets in the framework of the Europe 2020 process. Nevertheless, it appears that such targets do not need to be binding at present and that binding measures can achieve the same or better results. These binding measures, together with the current policy framework, should be sufficient to reach the EU's 20% target in 2020. However, progress needs to be followed and appropriate corrective measures taken early enough to ensure reaching of the 20% target in 2020 if progress is, after all, inadequate.

- The second-level policy options explore different measures to tackle the remaining economic potential at demand and supply side.

The IA looks at energy savings obligation schemes as a possible option for yielding energy savings in end-use sectors. It is concluded that energy saving obligations provide the opportunity to achieve significant savings but the existing provisions in the ESD (where such obligations are only one of the options provided to Member States to ensure that energy utilities achieve savings in end-use sectors) should be reinforced. The questions then raised are the level of energy savings required from energy utilities and whether the design of such obligation schemes should be completely left to the Member States or whether there should be some harmonisation of key design features. The IA suggests that national energy saving obligation schemes are introduced in all Member States aiming at an annual final energy reduction of 1.5%. While certain key features need to be harmonised at EU level (targeted sectors, level of ambition and counting methods), Member States should have the possibility to adjust the schemes to their national circumstances and in this way retain to a large degree the schemes already established. The option of introduction of a European system of tradable white certificates was also considered, but rejected for the same reasons as for the dismissal of the option consisting in a complete harmonisation of all design features of the scheme.

Another set of policy options look at possible measures involving the public sector. The analysis concludes that two measures are beneficial in this respect. Firstly, 3% of the buildings owned by public bodies should be renovated annually to cost-optimal levels. Secondly, public bodies should be required to purchase high energy performance products and buildings based on the available energy labels and certificates.

Other options with considerable positive impact compared to their costs are those aiming at promoting the energy services market, at providing improved and more frequent information to households and companies on their actual energy consumption through billing and smart meters, and at the establishment of mandatory energy audits for large companies. The IA shows that all these measures are important for reducing the information gap that is one of the barriers to efficiency and could result in important energy savings. Other options to

promote energy efficiency via merely voluntary measures are assessed as not being able to tap all available saving potential.

The IA also analyses which measures could contribute to realising efficiency potential in energy transformation and distribution. It disregards the options involving a continuation of the provisions of the current CHP Directive, as these do not promote energy efficiency across the energy supply sector, but only in relation to co-generation and without ensuring an actual promotion of CHP (Member States are only required to gather information and report to the Commission). The analysis suggests that the establishment of minimum performance requirements for energy generation, including as regards mandatory CHP and district heating/cooling requirements for new electricity generation installations and mandatory connection and priority access of high-efficiency cogeneration to the electricity grid, would significantly improve energy efficiency in generation. The establishment of energy efficiency obligations on energy network regulators is also a measure that should be retained to improve the efficiency in the transmission and distribution of energy.

Options for national reporting and monitoring of implementation are also studied. To limit the administrative burden whilst ensuring proper monitoring of progress, it is suggested to put in place a light form of annual reporting based on the selection of energy efficiency and savings indicators which could be fed into National Reform Programmes. This would be complemented by more detailed information on energy efficiency measures and programmes that would only be required from Member States every 3 years.

- The third-level policy options raise questions as regards the legal form in which the selected first and second level measures should be embodied. It is concluded that in order to reach the level of ambition of the EU 20% energy efficiency objective as set in 2007, EU policies need to look at every sector to reap energy saving potential, including potential in sectors excluded from the scope of application of the ESD. That is why it is proposed to adopt a new legislative proposal that covers the scope of the two Directives and extends it to all sectors with energy saving potential. Merging the two Directives into a single legislative text was considered to be an appropriate option also in order to streamline the existing legal framework and provide better coherence.

The analysis is not so conclusive as regards the legal form. However, as the concrete provisions of the legislative proposal have been developed, it has become clear that, in the light of the content and the need to adopt further implementing measures at national level, a Directive is the most appropriate legal form.

The modelling exercise undertaken to evaluate the overall impacts of the retained policy options shows that for the EU27 the net effect of the proposed measures reaches the 20% primary energy saving objective. The IA also shows that the additional costs of achieving the overall 20% target through the set of measures retained are proportionately modest compared to the benefits. The overall economic, social and environmental impacts of these measures will make a strong positive contribution to EU policies and underpin the Europe 2020 Strategy.

3. LEGAL ELEMENTS OF THE PROPOSAL

3.1. Summary of proposed action

The proposed Directive establishes a common framework for the promotion of energy efficiency within the Union to ensure the achievement of the Union's target of 20% primary energy savings by 2020 and to pave the way towards the realisation of further energy

efficiency beyond that date. It lays down rules designed to remove barriers and overcome market failures that impede efficiency in the supply and use of energy.

As regards the end-use sectors, the proposed Directive focuses on measures which establish requirements on the public both as regards the renovation of the buildings it owns and the purchase of buildings, products and services, where high energy efficiency standards would need to be applied. The proposal sets the obligation on Member States to establish national energy saving obligations schemes. It requires regular mandatory energy audits for large companies and sets a series of requirements on energy companies on metering and billing.

As for the energy supply sector, the proposal requires Member States to adopt national cogeneration plans for developing the potential for high-efficiency generation and efficient district heating and cooling. Member States must also adopt authorisation criteria that ensure that installations are located in sites close to heat demand points and that all new electricity generation installations and existing installations that are substantially refurbished are equipped with high-efficiency CHP units. The proposal requires Member States to introduce measures to develop district heating and cooling infrastructure, including through spatial planning and the development of regional and local heat plans. It also requires Member States to establish an inventory of energy efficiency data for all electricity and/or heat generating installations and establishes requirements as regards priority/guaranteed access to the grid and priority dispatch of electricity from high-efficiency cogeneration and the connection of new industrial plants producing waste heat to the district or cooling networks.

Other measures proposed include efficiency requirements on national energy regulators, information and aware-raising actions, requirements concerning the availability of certification schemes, actions to promote the development of energy services, and an obligation on Member States to remove obstacles to energy efficiency, notably as concerns the development of energy performance contracting and the split of incentives between the owner and tenant of a building or among building owners.

Finally, the proposal provides for the establishment of national energy efficiency targets for 2020 and requires the Commission to assess in 2013 whether the Union can achieve its target of 20% primary energy savings by 2012. The Commission is required to submit its assessment to the European Parliament and the Council, accompanied if necessary by a legislative proposal laying down mandatory national targets.

3.2. Legal basis

The Proposal is based on Article 194(2) of the Treaty on the Functioning of the European Union. According to Article 194(1), ‘in the context of the establishment and functioning of the internal market and with regard for the need to preserve and improve the environment, Union policy on energy shall aim, in a spirit of solidarity between Member States, to (...) c) promote energy efficiency and energy saving and the development of new and renewable forms of energy’. The aim of this Proposal is precisely to establish a common framework for the promotion of energy efficiency within the Union.

3.3. Subsidiarity principle

The subsidiarity principle applies to this Proposal insofar as energy policy does not fall under the exclusive competence of the Union.

The EU has set itself the objective of achieving 20% primary energy savings in 2020 and has enshrined it as one of the five headline targets of the Europe 2020 Strategy. The current energy efficiency framework, in particular the ESD and CHP Directives, have not managed to

tap the existing energy saving potentials. Furthermore, measures currently adopted at Member States level are also not sufficient to overcome the remaining market and regulatory barriers.

The energy challenges addressed by this proposal (security of energy supply, sustainability and climate change control, and EU competitiveness) are all common concerns of the EU as a whole. A collective response at EU level is necessary to ensure the coordination of actions and achieve common objectives more effectively.

The measures proposed by the new Directive ensure an equitable distribution of the efforts needed to arrive at the 20% objective and set a level playing field for all relevant market actors, notably through the establishment of minimum energy performance requirements (for instance as regards access to public markets, energy audit obligations on companies, energy saving obligations on energy utilities, access to the grid for co-generation producers etc.) The proposal provides also for certainty to investors as regards the achievement of the EU target and the support of energy efficiency improvement measures such as high-efficiency cogeneration and district heating and cooling.

3.4. Proportionality principle and choice of legal instrument

The proposal does not go beyond what is necessary to achieve the energy efficiency objective. It sets strict energy efficiency requirements in a number of areas, but Member States retain wide discretion to favour energy efficiency improvement measures in the way that suits their national circumstances best.

The instrument chosen is a Directive that has to be transposed in national law by the Member States. A Directive defines the final result to be achieved and the general requirements, while leaving sufficient flexibility to Member States to adapt implementation to their national specificities. In this particular case, a Directive is sufficient to achieve the objectives of the Proposal. The level of constraint is thus proportionate to the objective aimed at.

4. BUDGETARY IMPLICATION

The proposal has no implication for the Union budget.

5. ADDITIONAL INFORMATION

5.1. Simplification of the "acquis"

The proposal contributes to the simplification of the "acquis", although it does not belong to the list of measures of the Simplification work plan. As result of the adoption of this proposal, the ESD and CHP Directives will be revised and merged. A single Directive will result in a more integrated approach to energy efficiency and savings. Some administrative simplification should also result from the need to transpose only one Directive instead of two.

Reporting obligations are currently laid down in both Directives. These will be replaced with a single set of annual and 3-year reports, building on the reporting process under the Europe 2020 strategy.

Furthermore, this proposal simplifies the energy saving measurement requirements contained in the existing ESD. In this sense, it should help achieve a significant reduction in the administrative costs currently faced by Member States.

5.2. Repeal of existing legislation

The adoption of the Proposal will lead to the repeal of existing legislation. This concerns Article 9(1) and (2) of Directive 2010/30/EU; Directive 2004/8/EC; and Directive 2006/32/EC. Article 4 (1) to (4) and Annexes I, III and IV of the latter will only be repealed with effect from 1 January 2016.

5.3. Review/revision/sunset clause

The Proposal includes several review clauses.

5.4. Recasting

The Proposal does not involve recasting.

5.5. Correlation table

Member States are required to communicate to the Commission the text of national provisions transposing the Directive, as well as a correlation table between those provisions and the Directive.

5.6. European Economic Area (EEA)

The proposed act concerns an EEA matter and should therefore be applicable to it.

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

**on energy efficiency and amending and subsequently repealing Directives 2004/8/EC
and 2006/32/EC**

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty on the Functioning of the European Union, and in particular Article 194(2) thereof,

Having regard to the proposal from the Commission¹⁵,

Having regard to the opinion of the European Economic and Social Committee¹⁶,

Having regard to the opinion of the Committee of the Regions¹⁷,

Acting in accordance with the procedure laid down in Article 294 of the Treaty¹⁸,

Whereas:

- (1) The European Union is facing unprecedented challenges resulting from increased energy import dependency and scarcity of energy resources, and the need to limit climate change and overcome the economic crisis. Energy efficiency is a key means to help address those challenges. It improves EU security of supply by reducing primary energy consumption and decreasing energy imports. It contributes to the reduction of greenhouse gases emissions in a cost-effective way and thereby to controlling climate change. Furthermore, a move towards a more energy-efficient economy will enhance the spread of innovative technological solutions and improve the competitiveness of EU industry, boosting economic growth and creating quality jobs in several sectors related to energy efficiency.
- (2) The Presidency conclusions of the European Council of 8 and 9 March 2007 stressed the need to increase energy efficiency in the Union so as to achieve the objective of saving 20% of the Union's primary energy consumption by 2020 compared to projections. This objective amounts to a reduction of Union's primary energy consumption of 368 Mtoe in 2020¹⁹.

¹⁵ OJ C , , p. .

¹⁶ OJ C , , p. .

¹⁷ OJ C , , p. .

¹⁸ OJ C , , p. .

¹⁹ Projections made in 2007 showed a primary energy consumption in 2020 of 1842 Mtoe. A 20% reduction results in 1474 Mtoe in 2020, i.e. a reduction of 368 Mtoe as compared to projections.

- (3) The Presidency Conclusions of the European Council of 17 June 2010 confirmed the energy efficiency objective and designed it as one of the five EU headline targets of the European Union's new strategy for jobs and smart, sustainable and inclusive growth (Europe 2020 Strategy). In the framework of this process and in order to implement these policy priorities at national level, Member States are required to set their national targets in close dialogue with the Commission, and indicate, in their National Reform Programmes, how they intend to tackle them.
- (4) The Commission Communication Energy 2020²⁰ places energy efficiency at the core of the EU energy strategy for 2020 and outlines the need for a new energy efficiency strategy which enables all Member States to further decouple their energy use from economic growth.
- (5) In its Resolution of 15 December 2010 on the Revision of the Energy Efficiency Action Plan²¹ the European Parliament called on the Commission to include in its revised Energy Efficiency Action Plan measures to be put forward by the Commission to close the gap to reach the overall EU energy efficiency objective in 2020.
- (6) The Presidency Conclusions of the European Council of 4 February 2011 acknowledged that the EU energy efficiency objective is not on track and that determined action is required to tap the considerable potential for higher energy savings of buildings, transport and products and processes.
- (7) On 8 March 2011 the Commission adopted a new Energy Efficiency Plan in order to get the EU on track of achieving its energy efficiency objective. It spells out a series of energy efficiency policies and measures across the full energy chain, notably as regards energy generation, transmission and distribution, the leading role of public sector in energy efficiency, buildings and appliances, industry, and the need to empower final customers to be able to manage their energy consumption. The energy efficiency aspects related to the transport sector have been addressed in the Commission Transport White Paper, adopted on 28 of March 2011²².
- (8) This Directive aims to contribute to the achievement of the EU energy efficiency objective of saving 20% of the Union's primary energy consumption by 2020, and the realisation of further energy efficiencies beyond 2020. To this end, it establishes a common framework for the promotion of energy efficiency within the Union and lays down concrete actions to implement some of the proposals included in the Energy Efficiency Plan 2011 and achieve the significant unrealised energy saving potentials identified by the Plan.
- (9) The Effort Sharing Decision (No 406/2009/EC)²³ required the Commission to assess and report by 2012 on the progress of the Community and its Member States towards the objective to reduce energy consumption by 20 % by 2020 compared to projections for 2020. It also states that, in order to assist Member States in their contributions towards meeting the Community's greenhouse gas emission reduction commitments, the Commission will propose, by 31 December 2012, strengthened or new measures to

²⁰ COM/2010/0639 final.

²¹ 2010/2107(INI).

²² COM(2011) 144 final.

²³ OJ L 140, 5.6.2009, p.136.

accelerate energy efficiency improvements. This Directive responds to this requirement.

- (10) In order to tap on all the existing energy saving potentials, it is appropriate to adopt an integrated approach which encompasses savings both in the energy supply and the end-use sectors, while also stepping up the provisions of the Directive 2004/8/EC on promotion of cogeneration based on a useful heat demand in the internal energy market²⁴ and the Directive 2006/32/EC on energy end-use efficiency and energy services²⁵.
- (11) This Directive builds on the two-step approach to target setting set by the Energy Efficiency Plan 2011. As a first stage, Member States should be required to set national energy efficiency targets and programmes. Member States should be allowed to decide whether those targets should be binding or indicative in their territory. These targets and the individual efforts of each Member State should be evaluated by the Commission to assess likely achievement of the overall EU target and the extent to which the individual efforts meet the common goal. The Commission should support and provide tools for the Member States in the elaboration of their energy efficiency programmes and closely monitor their implementation through its revised legislative framework and within the Europe 2020 process. The Commission should provide an assessment of the results obtained and whether the programmes will, in combination, deliver the European 20% objective. If the review shows that the overall EU target is unlikely to be achieved, then as a second stage the Commission should propose mandatory national targets for 2020, taking into account the individual starting points of Member States, their economic performance and early action undertaken in the field.
- (12) With a total volume of public spending equivalent to 19% of the EU GDP, the public sector could be an important driver for stimulating market transformation towards more efficiency products, buildings and services and for triggering behavioural changes in citizens and enterprises in the way they consume energy. Furthermore, decreasing energy consumption through energy efficiency improvement measures can free public resources for other purposes. Public bodies at national, regional and local level should fulfil an exemplary role in the context of this Directive and communicate effectively their energy efficiency improvement measures.
- (13) Public buildings represent a considerable part of the total building stock and have a high visibility in public life. This Directive sets an annual rate of renovation of all buildings owned by public bodies in view of upgrading their energy performance. This renovation rate is without prejudice to the obligations set in Article 9 of Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings²⁶ with regard to nearly-zero energy buildings. The obligation to renovate public buildings complements Article 7 of Directive 2010/31/EU, which requires Member States to set minimum energy performance requirements for existing buildings undergoing major renovation.

²⁴ OJ L 52, 21.2.2004, p. 50.

²⁵ OJ L 144, 27.4.2008, p. 64.

²⁶ OJ L 153, 18.6.2010, p. 13.

- (14) In some Member States the public bodies owning social housing are not directly profiting from the public budget. Given the significant burdens that the application of the renovation rate could imply for these public bodies, Member States should be allowed not to apply to social housing the obligation to renovate. They should however be able to compute in the calculation of the renovation rate the actual renovations undertaken in social housing complying with the minimum energy performance requirements set in Article 4 (2) of this Directive. Member States should also be allowed not to apply Article 4(2) and Article 5(e) of this Directive to the categories of buildings listed in Article 3(2) of the Directive 2010/31/EU.
- (15) The Presidency conclusions of the European Council of 4 February 2011 called upon the Member States to include energy efficiency standards for relevant public buildings and services. This Directive sets a number of requirements on public bodies which conclude public works, supply or service contracts to lead by example with regards to the purchase of certain products and services and the purchase and rent of buildings. This Directive does not modify the procedures laid down in the Union's public procurement legislation. Rather, it fixes rules concerning the products, services or buildings which public bodies may purchase.
- (16) A number of Member States have already put into place energy and climate plans for public bodies and municipalities and setting objectives to improve their energy efficiency. When such plans exist for medium and big municipalities and for public bodies with significant annual energy consumption, they can yield considerable energy savings, especially if they are implemented by energy management systems that allow the concerned public bodies and municipalities to better manage their energy consumption. Member States should encourage their public bodies and municipalities to adopt energy efficiency plans with clear objectives and to make public to citizens their content and the progress in achieving such objectives.
- (17) Article 4(5) of the Directive 2006/32/EC required the Commission to examine, after having reviewed and reported on the first three years of application of the Directive, the possibility of bringing forward a proposal for a directive to further develop the market approach in energy efficiency improvement by means of white certificates. The impact assessment accompanying this Directive assesses such possibility and recommends the establishment of national energy saving obligation schemes on energy utilities. This Directive lays down a common framework for the national energy saving obligation schemes, providing significant flexibility to Member States to take full account of the national organisation of market actors and other specificities of the energy sector. The common framework allows energy utilities the possibility of offering energy services to all final customers, and not only to those to whom they sell energy. In this way, competition in the energy market is enhanced because energy utilities can differentiate their product by providing complementary energy services.
- (18) In order to realise the energy savings potential in certain market segments where energy audits are generally not sold commercially, such as households or small and medium-sized enterprises, Member States should ensure the availability of energy audits. By contrast, it is appropriate to make such energy audits compulsory and periodic for large enterprises, where the energy savings can be significant.
- (19) In defining energy efficiency improvement measures, account should be taken of efficiency gains obtained through the widespread use of cost-effective technological

innovations, for instance smart meters. To maximise their saving benefits, it is essential that final customers can visualise a number of indicators of consumption and that individual billing based on actual consumption takes place at regular frequency intervals.

- (20) High-efficiency cogeneration of combined heat and power (CHP) and district heating and cooling offers significant potentials for saving primary energy, but they are largely untapped in the Union. In order to tap such potentials, Member States should establish national plans for the development of high-efficiency CHP and district heating and cooling. New electricity generation installations should be equipped with high-efficient CHP units to recover waste heat stemming from the production of electricity. This waste heat could then be transported there where it is needed through district heating networks. For this purpose, it is important that Member States adopt authorisation criteria to promote the location of installations in sites close to heat demand points and the taking of appropriate measures to develop district heating and cooling infrastructure. When an existing electricity generation installation is substantially refurbished or when its permit or licence is updated, the feasibility of equipping it with a high-efficiency cogeneration unit should be considered first.
- (21) High efficiency cogeneration is in this Directive defined by the energy savings obtained by combined production instead of separate production of heat and electricity. Energy savings of more than 10% qualify for the term "high-efficiency cogeneration". The definitions of cogeneration and of high-efficiency cogeneration used in this Directive do not prejudice the use of different definitions in national legislation, for purposes other than those set out in this Directive. To maximise the energy savings and to avoid energy savings being lost, the greatest attention must be paid to the functioning conditions of cogeneration units.
- (22) To increase transparency for the final customer's choice between electricity from cogeneration and electricity produced on the basis of other techniques, it is necessary to ensure that, on the basis of harmonised efficiency reference values, the origin of high-efficiency cogeneration can be guaranteed. Schemes for the guarantee of origin do not by themselves imply a right to benefit from national support mechanisms. It is important that all forms of electricity produced from high-efficiency cogeneration can be covered by guarantees of origin. Guarantees of origin should be distinguished from exchangeable certificates.
- (23) The specific structure of the cogeneration and district and heating cooling sectors, which include many small and medium-sized producers, should be taken into account, especially when reviewing the administrative procedures for obtaining permission to construct cogeneration capacity or the associated networks.
- (24) Directive 2010/75/EU of the European Parliament and of the Council of 17 December 2010 on industrial emissions²⁷ includes energy efficiency among the criteria for determining the Best Available Techniques that should serve as a reference for setting the permit conditions of energy installations with a total thermal input of 50 MW or more. However, Article 9 of the Directive 2010/75/EU grants the Member States the possibility not to impose requirements relating to energy efficiency in respect of

²⁷ OJ L 334, 17.12.2010, p.17.

combustion units or other units emitting carbon dioxide on the site, for the activities listed in Annex I to Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community²⁸. In order to ensure that significant energy efficiency improvements are achieved in electricity and heat generation installations, actual energy efficiency levels should be monitored and compared with the relevant energy efficiency Best Available Techniques. The Commission should draw comparison of the energy efficiency levels and consider proposing additional measures, if significant discrepancies exist between the actual energy efficiency levels and the levels contained in the Best Available Techniques. The collected information on the actual energy efficiency values should also be used for the review, in accordance with Annex IV and the procedure referred to in Article 21, of the harmonised efficiency reference values for separate production of heat and electricity set out in the Commission Decision 2007/74/EC of 21 December 2006²⁹.

- (25) Member States should set up on the basis of objective, transparent and non-discriminatory criteria, their rules relating to the bearing and sharing of costs of grid connections and grid reinforcements and for technical adaptations necessary to integrate new producers of electricity produced from high efficiency cogeneration, taking into account guidelines and codes developed pursuant to Regulation (EC) No 714/2009. It is also appropriate to allow producers of electricity produced from high-efficiency cogeneration to issue a call for tender for the connection work. Especially for small scale and micro-cogeneration units access to the grid system of electricity produced from high-efficiency cogeneration should be facilitated subject to notification to the Commission.
- (26) Availability of a sufficient number of reliable professionals competent in the field of energy efficiency is paramount to ensure the effective and timely implementation of this Directive, for instance as regards the compliance with the requirements on energy audits or on the implementation of energy saving obligation schemes. Member States should put in place certification schemes for the providers of energy services, energy audits and other energy efficiency improvement measures.
- (27) It is necessary to continue promoting the market for energy services in order to ensure the availability of both the demand and the supply for energy services. To this can contribute a higher transparency by means of market overviews and lists of energy services providers. Model contracts and guidelines in particular for the use energy performance contracting can also help the development of the demand. As in other form of third-party financing arrangement, in an energy performance contract the beneficiary of the energy service avoids investment costs by using part of the financial value of energy savings to repay the third party's investment and interest costs.
- (28) There is a need to identify and remove a number of regulatory and non-regulatory barriers to the use of energy performance contracting and other third-party financing arrangements for energy savings. These include, among others, accounting rules and practices preventing that capital investments and annual financial savings resulting from energy efficiency improvement rules are adequately reflected in the balances

²⁸ OJ L 275, 25.10.2003, p. 32.

²⁹ OJ L 32, 6.2.2007, p. 183.

throughout the whole life of the investment. Obstacles to the renovation of the existing building stock based on a split of incentives between the different concerned actors should also be tackled at national level.

- (29) Article 4(1) of the Directive 2006/32/EC requires Member States to adopt and aim to achieve an overall national indicative energy savings target of 9 % by 2016, to be reached by way of energy services and other energy efficiency improvement measures. Article 14(3) states that the second Energy Efficiency Plan adopted by the Member States shall be followed, as appropriate and where necessary, by proposals for additional measures, including a possible extension of the period of application of targets. If the report concludes that insufficient progress has been made towards achieving the indicative national targets, these proposals shall address the level and nature of the targets. It results from the impact assessment accompanying this Directive that the Member States are on track of achieving the target referred to in Article 4(1) of the Directive 2006/32/EC and therefore it is not suitable to address the level of the targets. While this Directive repeals the Directive 2006/32/EC, it is appropriate that Article 4 of the Directive 2006/32/EC continues deploying its effects until the deadline for the achievement of the 9% target.
- (30) With the entry into force of this Directive, all substantive provisions of Directive 2004/8/EC and Directive 2006/32/EC, except as regards its Article 4 (1) to (4) and its Annexes I, III and IV, should be repealed. This Directive should also be repealed Article 9 (1) and (2) of Directive 2010/30/EU of 19 May 2010 on the indication by labelling and standard product information of the consumption of energy and other resources by energy-related products.³⁰
- (31) Since the objective of this Directive, namely the achievement of the EU overall energy efficiency target of 20% primary energy savings by 2020 and paving the way towards further efficiencies beyond 2020, is not on track of being achieved by the Member States without taking additional energy efficiency measures, and can by the reason of the scale and the effects of the action be better achieved at Union level, the Union may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty on European Union. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary in order to achieve that objective.
- (32) In order to adapt to technical progress and changes in the distribution of energy sources, the power to adopt acts in accordance with Article 290 of the Treaty on the Functioning of the European Union should be delegated to the Commission in respect of Annexes I to X to this Directive and Annex I to Commission Decision 2007/74/EC. It is of particular importance that the Commission carry out appropriate consultations during its preparatory work, including at expert level. The Commission, when preparing and drawing-up delegated acts, should ensure a simultaneous, timely and appropriate transmission of relevant documents to the European Parliament and Council.
- (33) The obligation to transpose this Directive into national law should be confined to those provisions which represent a substantive change as compared with Directives

³⁰ OJ L 153, 18.6.2010, p. 1.

2004/8/EC and 2006/32/EC. The obligation to transpose the provisions which are unchanged arises under those Directives.

- (34) This Directive should be without prejudice to the obligations of the Member States relating to the time limits for transposition into national law and application of the Directives 2004/8/EC and 2006/32/EC.
- (35) In accordance with point 34 of the Interinstitutional Agreement on better law-making³¹, Member States are encouraged to draw up, for themselves and in the interest of the Union, their own tables, illustrating, as far as possible, the correlation between this Directive and the transposition measures, and to make them public,

HAVE ADOPTED THIS DIRECTIVE:

CHAPTER I

Subject Matter, Scope and Energy efficiency targets

Article 1

Subject matter and scope

1. This Directive establishes a common framework for the promotion of energy efficiency within the Union in order to ensure the achievement of the Union's target of 20% primary energy savings by 2020 and to pave the way for further energy efficiency improvements beyond that date. It lays down rules designed to remove barriers and overcome market failures that impede efficiency in the supply and use of energy, and provides for the establishment of national energy efficiency targets for 2020.
2. The requirements laid down in this Directive are minimum requirements and shall not prevent any Member State from maintaining or introducing more stringent measures. Such measures must be compatible with the Treaties. They shall be notified to the Commission.

Article 2

Definitions

For the purposes of this Directive, the following definitions shall apply:

1. "energy": all forms of commercially available energy, including electricity, natural gas (including liquefied natural gas), liquefied petroleum gas, any fuel for heating and cooling (including district heating and cooling), coal and lignite, peat, transport fuels (excluding aviation and maritime bunker fuels) and biomass as defined in Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of use of energy³².

³¹ OJ C 321, 31.12.2003, p. 1.

³² OJ L 140, 5.6.2009, p. 140.

2. "primary energy consumption": gross inland consumption, as defined by the Regulation 1099/2008³³, excluding non-energy uses;
3. "energy service": the physical benefit, utility or good derived from a combination of energy with energy efficient technology and/or with action, which may include the operations, maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to lead to verifiable and measurable or estimable energy efficiency improvement and/or primary energy savings;
4. "final customer": a natural or legal person who purchases energy for his or her own end use;
5. "energy service provider": a natural or legal person who delivers energy services and/or other energy efficiency improvement measures in a final customer's facility or premises;
6. "energy service company" (ESCO): an energy services provider that accepts some degree of financial risk in providing energy services, so that the payment for the services delivered is based wholly or in part on the achievement of energy efficiency improvements and on the meeting of the other agreed performance criteria;
7. "energy management systems": set of interrelated or interacting elements of an organisation formulated to set an energy efficiency objective and a strategy to achieve that objective;
8. "energy performance contracting": a contractual arrangement between the beneficiary and the provider (normally an ESCO) of an energy efficiency improvement measure, according to which the payments for investments in that measure are in relation to a contractually agreed level of energy efficiency improvement;
9. "public internal performance contracting": an energy performance contracting arrangement between a beneficiary public body and the public energy service provider;
10. "energy audit": a systematic procedure to obtain adequate knowledge of the existing energy consumption profile of a building or group of buildings, an industrial or commercial operation or installation or a private or public service, identify and quantify cost-effective energy savings opportunities, and report the findings;
11. "obligated parties": the energy distributors, distribution system operators or retail energy sales companies that are bound by the national energy saving obligation scheme referred to in Article 6;
12. "transmission system operator": a natural or legal person responsible for operating, ensuring the maintenance of, and, if necessary, developing the transmission system in a given area and, where applicable, its interconnections with other systems, and

³³ OJ L 304, 14.11.2008, p. 1.

for ensuring the long-term ability of the system to meet reasonable demands for the transmission/transport of energy;

13. "energy distributor": a natural or legal person responsible for transporting energy with a view to its delivery to final customer and to distribution stations that sell energy to final customers, with the exception of distribution system operators as defined in point (15);
14. "distribution system operator": a natural or legal person responsible for operating, ensuring the maintenance of, and, if necessary, developing the distribution system in a given area and, where applicable, its interconnections with other systems, and for ensuring the long-term ability of the system to meet reasonable demands for the distribution of energy;
15. "retail energy sales company": a natural or legal person who sells energy to energy final customers. This definition does not include companies that sell transport fuels;
16. "small distribution system operator and small retail energy sales company": a natural or legal person that distributes or sells energy to final customers, and that distributes or sells less than the equivalent of 75 GWh energy per year or employs fewer than 10 persons or whose annual turnover and/or annual balance sheet total does not exceed EUR 2000 000;
17. "public body": State, regional or local authorities, bodies governed by public law, associations formed by one or several such authorities or one or several of such bodies governed by public law. Body governed by public law shall be understood as defined in the Directive 2004/18/EC on the coordination of procedures for the award of public works contracts, public supply contracts and public services contracts.
18. "cogeneration": the simultaneous generation in one process of thermal energy and electrical and/or mechanical energy;
19. "economically justifiable demand": the demand that does not exceed the needs for heat or cooling and which would otherwise be satisfied at market conditions by energy generation processes other than cogeneration;
20. "useful heat": heat produced in a cogeneration process to satisfy an economically justifiable demand for heating or cooling;
21. "electricity from cogeneration": electricity generated in a process linked to the production of useful heat and calculated in accordance with the methodology laid down in Annex IV;
22. "high-efficiency cogeneration": cogeneration meeting the criteria of Annex V;
23. "overall efficiency": the annual sum of electricity and mechanical energy production and useful heat output divided by the fuel input used for heat produced in a cogeneration process and gross electricity and mechanical energy production;
24. "power to heat ratio": the ratio between electricity from cogeneration and useful heat when operating in full cogeneration mode using operational data of the specific unit;

25. "cogeneration unit": a unit that can operate in cogeneration mode;
26. "small scale cogeneration unit": a cogeneration unit with installed capacity below 1MWe;
27. "micro-cogeneration unit": a cogeneration unit with a maximum capacity below 50 kWe;
28. "residential micro-cogeneration unit": a cogeneration unit with a maximum capacity of below 6 kWe;
29. "distributed cogeneration": a cogeneration unit connected to the electricity distribution grid;
30. "plot ratio": the ratio between the land area and the building floor area (m²) in a given territory.

Article 3
Energy efficiency targets

1. Member States shall set a national energy efficiency target expressed as an absolute level of primary energy consumption in 2020. In doing so, they shall take into account the Union's target of 20% energy savings, the measures contained in this Directive, and other measures to promote energy efficiency within Member States and at Union level.
2. By 30 June 2014, the Commission shall assess whether the Union is likely to achieve its target of 20% primary energy savings by 2020, namely a reduction of EU primary energy consumption of 368 Mtoe in 2020, taking into account the sum of the national targets referred to in paragraph 1 and the evaluation referred to in Article 20(5).

CHAPTER II
Efficiency in energy use

Article 4
Public bodies

In addition to Article 7 of Directive 2010/31/EU, Member States shall ensure that, as from 1 January 2014, 3% of the total floor area referred to in Article 20(1) d) is renovated each year to meet at least the minimum energy performance requirements set by the Member State concerned in application of Article 4 of Directive 2010/31/EU. Compliance with the minimum energy performance requirements shall be verified by means of the energy performance certificate referred to in Article 11 of Directive 2010/31/EU. Upon request, Member States shall make available to the Commission such proofs of compliance.

1. For the purposes of paragraph 1, by 31 December 2012, Member States shall establish and make publicly available an inventory of buildings owned by their public bodies indicating:
 - (a) the floor area in m²;

- (b) the energy performance of each building;

This inventory shall be updated annually.

2. Member States shall encourage municipalities and other public bodies to:
 - (a) adopt an energy efficiency plan, standing alone or as part of a broader climate or environmental plan and containing concrete energy saving objectives, with a view to continuously improving their energy efficiency;
 - (b) put in place an energy management system to implement their plan.

Article 5 **Public spending**

Member States shall ensure that public bodies purchase only products, services and buildings with the highest energy efficiency standards, as referred to Annex I.

Article 6 **Energy saving obligation schemes**

1. Member States shall adopt energy saving obligation schemes. These schemes shall require retail energy sales companies or distribution system operators to achieve annual energy savings among final customers in the Union equal to 1,5% of their market share in the market for final customers in the previous year multiplied by the total volume consumed by final customers in the Member State in the previous year. The Commission shall adopt guidelines on how to deal with the energy savings targets when final customers switch energy source, namely from fuel oil to gas, from gas to district heating or from gas to electricity. Measures that do not target long-term savings, as defined in Annex I (1), shall not account for more than 10% of the amount of energy savings required from each obligated party.
2. Member States shall ensure that the savings claimed by obligated parties are verified in accordance with Annex II (2).
3. Member States may in particular:
 - (a) include requirements with a social aim in the saving obligations they impose;
 - (b) permit obligated parties to count towards their obligation accredited energy savings achieved by energy service providers or other third parties. In this case they shall establish an accreditation process that is clear, transparent, and open to all competitors, and aims at minimising the costs of accreditation;
 - (c) use a system of certificates to allow savings achieved by third parties to count towards the obligations to be fulfilled by obligated parties;
 - (d) allow obligated parties to count savings obtained in a given year as if they had instead been obtained in any of the two previous or two following years.

4. Member States shall ensure that market actors refrain from any activities that might impede the demand for and delivery of energy services or other energy efficiency improvement measures, or hinder the development of markets for energy services or other energy efficiency improvement measures, including by foreclosing the market for competitors or abusing dominant positions.
5. Member States may exclude small distributors, small distribution system operators and small retail energy sales companies from the application of this Article.

Article 7
Energy audits and energy management systems

1. Member States shall promote the availability of energy audits which are carried out in an independent manner by qualified or accredited experts, including for households and small and medium-sized enterprises.

Member States shall develop programmes to encourage households and small and medium-sized enterprises to undergo energy audits.

2. Member States shall ensure that enterprises not included in the second subparagraph of paragraph 1 are subject to an energy audit carried out in an independent manner by qualified or accredited experts at the latest by 30 June 2014 and every three years from the date of the previous energy audit. Energy audits may stand alone or be part of a broader environmental audit.
3. Independent audits resulting from energy management schemes implemented under the provisions of voluntary agreements that have been concluded between organisations of stakeholders and an appointed body and that are supervised by the Member State concerned or by the Commission shall be considered as fulfilling the requirements of paragraph 2.

Article 8
Metering and informative billing

1. When Member States put in place the roll-out of smart meters foreseen by the 2009/72 and 2009/73 Directives concerning electricity and gas markets, they shall ensure that the objectives of the energy efficiency are fully taken into account when establishing the minimum functionalities they will impose on market participants.

Member States shall ensure that final customers of electricity, natural gas, district heating or cooling and district-supplied domestic hot water are provided with individual meters that accurately measure and allow to make available their actual energy consumption and provide information on actual time of use.

Where a building is supplied with heating or cooling from a district heating network, a heat meter shall be installed at the building entry. In multi-apartment buildings, individual heat consumption meters shall also be installed to measure the consumption of heat or cooling for each apartment. Where the use of individual heat consumption meters is not technically feasible, individual heat cost allocators, in

accordance with the specifications contained in Annex III (1.2), shall be used for measuring heat consumption at each radiator.

Member States shall introduce rules on cost allocation of heat consumption in multi-apartment buildings supplied with centralised heat or cooling. Such rules shall include guidelines on correction factors to reflect building characteristics such as heat transfers between apartments.

2. In addition to the obligations resulting from Directive 2009/72/EC and Directive 2009/73/EC with regard to billing, Member States shall ensure the accuracy and the frequency of the billing and that the billing is based on actual consumption, for all the sectors covered by the present Directive, including energy distributors, distribution system operators and retail energy sales companies, in accordance with the minimum frequency set out in Annex III (2.2):
 - a) not later than 1 January 2014 for electricity and natural gas; and
 - b) not later than 1 January 2015 for hot water and centralised heat.

Appropriate information shall be made available with the bill to provide final customers with a comprehensive account of current energy costs, in accordance with Annex III (2.1).

Member States shall ensure that all final customers are offered an option for electronic billing and access to complementary information via internet allowing detailed self-checks on historical consumption.

Member States shall require that if final customers request it, information on their energy billing and historical consumption is made available to an energy service provider designated by the final customer.

4. When sending contracts, contract changes, energy distributors, distribution system operators and retail energy sales companies shall inform their customers in a clear and understandable manner on contact information of consumer advice centres, energy agencies or similar institutions, including their internet addresses, where they can obtain advice on available energy efficiency measures, benchmark profiles for their energy consumption and technical specifications of energy using appliances that can serve to reduce the consumption of these appliances.

CHAPTER III **Efficiency in energy supply**

Article 9 ***Promotion of efficiency in heating and cooling***

1. By 1 January 2013, Member States shall establish and notify to the Commission a national heating and cooling plan for developing the potential for the application of high-efficiency cogeneration and efficient district heating and cooling, containing the information referred to in Annex IV. The plans shall be updated every five years. Member States shall ensure by means of their regulatory framework for spatial planning that national heating and cooling plans are taken into account in the

development of urban spatial plans, which should fulfil the design criteria referred to in Annex IV.

2. Member States shall take the necessary measures to develop district heating and cooling infrastructure to accommodate the development of high-efficiency cogeneration and the use of heating and cooling from waste heat and renewable energy sources.
3. Member States shall adopt authorisation criteria, as referred to in Article 7 of Directive 2009/72/EC, to ensure that all new thermal electricity generation capacity:
 - a) is provided with a high-efficiency cogeneration unit to recover waste heat; and
 - b) is located in sites where economic use can be made of heat from this unit.

The Commission shall establish, by means of delegated acts in accordance with Articles 16 and 17 conditions under which the provisions of the first subparagraph shall not apply.

4. Member States shall ensure that national planning regulations are adapted to the authorisation criteria referred to in paragraph 5 and are in line with their national cogeneration plans.
5. Member States shall ensure that, whenever an existing electricity generation installation is substantially refurbished or when, in accordance with Article 21 of Directive 2010/75/EC, its permit is updated, the conversion of this installation into cogeneration is a condition for the renovation of the permit or license. The equipment of electricity generation installations with carbon capture or storage facilities shall not be considered as refurbishment for the purpose of this provision.

The Commission shall establish, by means of delegated acts in accordance with Articles 16 and 17, conditions under which the provisions of the first subparagraph shall not apply.

6. New large industrial plants or other large heat-using facilities that are built within 50 km of an existing district heating or cooling network shall capture and make use of their waste heat. They shall be connected to the district heating and cooling network.
7. On the basis of the harmonised efficiency reference values referred to in Annex VI (f), Member States shall ensure that the origin of electricity produced from high-efficiency cogeneration can be guaranteed according to objective, transparent and non-discriminatory criteria laid down by each Member State. They shall ensure that this guarantee of origin complies with the requirements and contains at least the information specified in Annex VIII.
8. Member States shall ensure that any available support for cogeneration is subject to the electricity produced originating from high-efficiency cogeneration and the waste heat being effectively used to achieve primary energy savings. If support is provided, all electricity produced from high-efficiency cogeneration shall be entitled to it.

Article 10
Energy generation

1. For all thermal electricity and/or heat generating installations within their territory with a total thermal nominal capacity of more than 50 MW Member States shall, by 1 January 2013, establish an annual inventory of data in accordance with Annex X. The annual plant-by-plant data contained in these inventories shall be made available to the Commission upon request, in a format that respects confidentiality requirements.

Member States shall include a non-confidential summary containing aggregated information of the inventories in the reports referred to in Article 20(3).

2. The Commission's assessment of the first report referred to in Article 20(3) shall include an assessment of the energy efficiency levels of existing and new electricity and heat generating installations in the light of the relevant Best Available Techniques, as developed in the framework of Directive 2010/75/EU. If this assessment shows significant discrepancies between the actual energy efficiency levels of electricity and heat installations and the Best Available Techniques, the Commission shall propose, if appropriate, efficiency improvement requirements or that the use of such techniques shall in future be a condition for authorisation of new facilities and for the periodic renewal of the authorisation of existing facilities.

Article 11
Energy transmission and distribution

1. Member States shall ensure that national energy regulatory authorities take due regard of energy efficiency in their decisions on the operation of the gas and electricity infrastructure. They shall in particular ensure that network tariffs and regulations provide incentives for grid operators to offer system services to network users necessary to implement energy efficiency improvement measures in the context of continuing deployment of smart grids.

Member States shall ensure that network regulation, and network tariffs set or approved by energy regulatory authorities, fulfil the criteria referred to in Annex X, taking into account guidelines and codes developed pursuant to Regulation 714/2009 and Regulation 715/2009.

2. Member States shall, by 30 June 2013, adopt plans:
 - a) assessing the energy efficiency potentials of their gas and electricity infrastructure, notably regarding its transmission, distribution, load management, and the connection to energy generating installations;
 - b) identifying concrete measures and investments for the introduction of cost-effective energy efficiency improvements in the grid infrastructure, with a detailed timetable for their introduction.
3. Member States may permit components of schemes and tariff structures with a social aim for net-bound energy transmission and distribution, provided that any disruptive

effects on the transmission and distribution system are kept to the minimum necessary and are not disproportionate to the social aim.

4. Member States shall ensure the removal of those incentives in transmission and distribution tariffs that unnecessarily increase the volume of distributed or transmitted energy. In this respect, in accordance with Article 3(2) of Directive 2009/72/EC and with Article 3(2) of Directive 2009/73/EC, Member States may impose public service obligations relating to energy efficiency on undertakings operating in the electricity and gas sectors respectively.
5. Member States shall ensure that transmission system operators and distribution system operators in their territory fulfil the requirements referred to in Annex XI. Member States may particularly facilitate the access to the grid system of electricity produced from high-efficiency cogeneration from small scale and micro cogeneration units.
6. Member States shall take the appropriate steps to ensure that high-efficiency cogeneration operators can offer balancing services and other operational services at the level of transmission system operators or distribution system operators where this is consistent with the mode of operation of the high-efficiency cogeneration installation. The transmission system operators and distribution system operators shall ensure that such services are part of a services bidding process which is transparent and open to scrutiny.

Where appropriate, Member States may require transmission system operators and distribution operators to encourage high-efficiency cogeneration to be sited close to areas of demand by reducing the connection and use-of system charges appropriately.

CHAPTER IV *Horizontal provisions*

Article 12 *Availability of certification schemes*

1. With a view to achieving a high level of technical competence, objectivity and reliability, Member States shall ensure that, by 1 January 2014, certification schemes or equivalent qualification schemes become or are available for providers of energy services, energy audits and energy efficiency improvement measures, including for installers of building elements as defined by Directive 2010/31/UE.
2. Member States shall make publicly available the certification schemes or equivalent qualification schemes referred to in paragraph 1 and shall cooperate among themselves and with the Commission to allow for the comparison and recognition of their schemes.

Article 13
Energy services

Member States shall promote the energy services market and the access of small and medium-sized enterprises to this market by:

- a) making publicly available, checking and regularly updating a list of available energy service providers and the energy services they offer;
- b) providing model contracts, notably for energy performance contracting;
- c) disseminating information on available energy service contracts and clauses that should be included in such contracts to guarantee energy savings and final customers' rights;
- d) encouraging the development of voluntary quality labels.

Article 14
Other measures to promote energy efficiency

1. Member States shall evaluate and seek to remove regulatory and non-regulatory barriers to energy efficiency, notably as regards:
 - a) the split of incentives between the owner and the tenant of a building or among owners, with a view to ensuring that they are not deterred from making efficiency-improving investments that they would otherwise have made by the fact that they will not individually obtain the full benefits or by the absence of rules for dividing the costs and benefits between them;
 - b) legal and regulatory provisions, administrative practices and accounting rules concerning public procurement and spending, , with a view to ensuring that individual public bodies are not deterred from making efficiency-improving investments.

These measures may include the establishment of incentives, the repeal or amendment of the relevant legal or regulatory provisions, and the adoption of guidelines and interpretative communications.

2. The measures referred to in paragraph 1 shall be notified to the Commission in the first supplementary report referred to in Article 20(3).

Article 15
Conversion factors

For the purpose of comparison of energy savings and conversion to a comparable unit, the conversion factors in Annex XII shall apply unless the use of other conversion factors can be justified.

CHAPTER V
Final provisions

Article 16
Delegated acts

1. The Commission shall be empowered to adopt delegated acts to adapt to technical progress the values, calculation methods and requirements in Annexes I to XIII to this Directive, in accordance with Article 17.
2. The Commission shall be empowered to adopt delegated acts to adapt to technical developments and changes in the distribution of energy sources the harmonised efficiency reference values for separate production of electricity and heat established in Annex I of Commission Decision 2007/74/EC, in accordance with Article 17.

Article 17
Exercise of the delegation

1. The power to adopt delegated acts is conferred on the Commission subject to the conditions laid down in this Article.
2. The delegation of power referred to in Article 16 shall be conferred on the Commission for an indeterminate period of time from the [date of entry into force of this Directive].
3. The delegation of power referred to in Article 16 may be revoked at any time by the European Parliament or by the Council. A decision of revocation shall put an end to the delegation of the power specified in that decision. It shall take effect the day following the publication of the decision in the *Official Journal of the European Union* or at a later date specified therein. It shall not affect the validity of any delegated acts already in force.
4. As soon as it adopts a delegated act, the Commission shall notify it simultaneously to the European Parliament and to the Council.
5. A delegated act adopted pursuant to Article 16 shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of [2 months] of notification of that act to the European Parliament and the Council or if, before the expiry of that period, the European Parliament and the Council have both informed the Commission that they will not object. That period shall be extended by [2 months] at the initiative of the European Parliament or the Council.

Article 18
Review and monitoring of implementation

1. By 30 April each year, Member States shall report:
 - a) on the progress achieved towards the national energy efficiency targets. This report shall be complemented by an estimate of expected primary energy consumption in 2020.

- b) on an estimate of energy consumption and activity indicators in the previous year in the following sectors:
 - (i) industry;
 - (ii) residential and tertiary;
 - (iii) transport;
 - (iv) energy supply.

In sectors where consumption remains stable or is growing, Member States shall analyse the reasons for it.

- c) on updates on major legislative and non-legislative measures implemented in the previous year which contribute towards the overall national energy efficiency targets for 2020.
- d) on the total building floor area owned by its public bodies that, at the beginning of the year, did not meet the energy performance requirements referred to in Article 4(1).
- e) on the total building floor area owned by its public bodies that was renovated in the previous year. A building floor area is deemed renovated when, following the renovation, the energy performance certificate has been issued in accordance to Article 4(1).
- f) on energy savings achieved through the national energy saving obligation schemes referred to in Article 6.

The first report shall also include the national target referred to in Article 3(1).

2. By 30 June 2014, and every three years thereafter, Member State shall submit supplementary reports with information on national energy efficiency policies, action plans, programmes and measures implemented or planned at national, regional and local level to improve energy efficiency in view of achieving the national energy efficiency targets referred to in Article 3(1). These reports shall include the information specified in Annex XIII. The Commission shall, not later than 31 December 2013, provide a template for the supplementary reports.
3. The reports referred to in paragraph 1 may form part of the National Reform Programmes referred to in Council Recommendation 2010/410/EU.
4. The Commission shall evaluate the annual reports and supplementary reports and assess the extent to which Member States have made progress towards the achievement of their national energy efficiency targets required by Article 3(1) and towards the implementation of this Directive. The Commission shall send its assessment to the European Parliament and the Council. Based on its assessment of the reports the Commission may issue recommendations to Member States.
5. in Article 3(2) to the European Parliament and to the Council, followed, if appropriate, by a legislative proposal laying down mandatory national targets.

6. By 30 June 2018, the Commission shall report to the European Parliament and the Council on the implementation of Article 6. That report shall be followed, if appropriate, by a legislative proposal for one or more of the following purposes:
 - a) to change the saving rate laid down in Article 6(1);
 - b) to establish additional common requirements, in particular as regards Article 6(3);
 - c) to establish a common EU energy saving obligation scheme.
7. By 30 June 2018, the Commission shall assess the progress made by Member States in removing the regulatory and non-regulatory barriers referred to in Article 14(1); followed, if appropriate, by a legislative proposal.

Article 19 **Repeal**

Directive 2006/32/EC as amended by the Regulations indicated in Annex XI, Part A, is hereby repealed with effect from [\[the date into force of this Directive\]](#), except its Article 4 (1) to (4) and Annexes I, III and IV, without prejudice to the obligations of the Member States relating to the time limit for transposition into national law of the Directive set out in Annex XIV, part B. Articles 4 (1) to (4) and Annexes I, III and IV of the Directive 2006/32/EC shall be repealed with effect from 1 January 2016.

Directive 2004/8/EC as amended by the Regulations indicated in Annex XIV, Part A, is hereby repealed with effect from [\[the date into force of this Directive\]](#), without prejudice to the obligations of the Member States relating to the time limit for transposition into national law of the Directive set out in Annex XIV, part B.

Article 9(1) and (2) of Directive 2010/30/EU is hereby repealed with effect from [\[the date into force of this Directive\]](#).

References to Directive 2006/32/EC and Directive 2004/8/EC shall be construed as references to this Directive and shall be read in accordance with the correlation table set out in Annex XIV, part B.

Article 20 **Penalties**

Member States shall lay down rules on penalties applicable in case of non-compliance with the national provisions adopted pursuant to Articles 6 to 8 of this Directive and shall take all the necessary measures to ensure that they are implemented. The penalties provided must be effective, proportionate and dissuasive. Member States shall communicate those provisions to the Commission by 30 June 2014 at the latest and shall notify it without delay of any subsequent amendment affecting them.

Article 21
Transposition

1. Member States shall adopt and publish, by [12 months after the adoption of this Directive] at the latest, the laws, regulations and administrative provisions necessary to comply with this Directive. They shall forthwith communicate to the Commission the text of those provisions. The communication will be accompanied by a correlation table between those provisions and this Directive.

When Member States adopt those provisions, they shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

Article 22
Entry into force

This Directive shall enter into force on the 20th day following that of its publication in the *Official Journal of the European Union*.

Article 23
Addressees

This Directive is addressed to the Member States.

Done at Brussels,

For the European Parliament
The President

For the Council
The President

ANNEX I
Public spending requirements

Public bodies that purchase products, services or buildings shall in particular:

- a) where a product is covered by a delegated act adopted under Directive 2010/30/EU, purchase only products that comply with the criterion of belonging to the highest energy efficiency class;
- b) where a product is covered by Decision 2006/1005/EC³⁴, purchase only products that comply with energy efficiency requirements not less demanding than those listed in Annex C of the Agreement attached to that Decision 2006/1005/EC;
- c) purchase only tyres that comply with the criterion of having the highest fuel energy efficiency class, as defined by the Regulation (EC) 1222/2009³⁵;
- d) require in their tenders for public service contracts that service providers use only products that comply with the requirements referred to in (a) to (c), when providing the public services in question;
- e) purchase or rent only buildings that comply at least with the minimum energy performance requirements referred to in Article 4(1). Compliance with these requirements shall be verified by means of the energy performance certificate referred to in Article 11 of Directive 2010/31/EU.

³⁴ OJ L 381, 28.12.2006, p.24.

³⁵ OJ L 342, 22.12.2009, p. 46.

ANNEX II
Energy saving obligation schemes

1. Measures that do not target long-term savings

The following measures shall be considered as not targeting long-term savings in the sense of Article 6(1):

- Distribution or installation of energy efficient compact fluorescent light bulbs
- Distribution or installation of energy efficient shower heads
- Energy audits

2. Calculations of energy savings

The calculation of energy savings in the national energy saving obligation schemes shall take into account the lifetime of measures. Obligated parties may use one or more of the following methods for calculating energy savings for the purposes of point 1:

- a) engineering estimates;
- b) metering;
- c) the default values and lifetimes in paragraph 3 of this Annex or
- d) standard values and lifetimes that Member States have adopted on a clear and sound basis. Such values shall be notified to the Commission. The Commission may request that such values are modified, where they are likely to distort competition or where they show less ambition than the default values and lifetimes in paragraph 3 of this Annex.

Member States shall publish the energy savings achieved by each obligated party and data on the annual evolution of energy savings. For the purpose of publication and verification of the energy savings achieved, Member States shall require obligated parties to submit to them at least the following data:

- a) the energy savings achieved;
- b) aggregated statistical information on their final customers (identifying significant changes to previously submitted information);
- c) current information on final customers' consumption, including, where applicable, load profiles, customer segmentation and geographical location of customers, while preserving the integrity and confidentiality of information that is either of private character or commercially sensitive, in compliance with applicable Union legislation.

3. Default values

Equipment type	European default value
1. Household appliances	

1.1. Unitary energy savings for washing machines	13	kWh/year
1.2. Unitary energy savings for dishwashers	44	kWh/year
1.3. Unitary energy savings for refrigerators	67	kWh/year
1.4. Unitary energy savings for freezers	71	kWh/year
1.5. Unitary energy savings for fridge-freezers	69	kWh/year
2. Lighting		
2.1. Residential lighting		
Unitary energy savings GLS ³⁶ to CFL	47	kWh/year
Average operating hours residential	1000	h/year
2.2. Tertiary lighting		
Unitary energy savings GLS to CFL	118	kWh/year
Unitary energy savings T8 to T5 (linear fluorescent lamps)	22,5	kWh/year
Unitary energy savings electronic ballasts	15	kWh/year
Unitary energy savings occupancy sensors	40	kWh/year
Average operating hours office buildings	2500	h/year
Average operating hours commercial buildings	4000	h/year
Average operating hours hospitals	5000	h/year
3. Office equipment		
3.1. Unitary energy savings for desktop computers	39	kWh/year
Desktop PC average annual active mode hours	2279	h/year
Desktop PC average annual standby mode hours	3196	h/year
3.2. Unitary energy savings for LCD monitors	11	kWh/year
Monitor average annual active mode hours	2586	h/year
Monitor average annual standby mode hours	3798	h/year
Laptop PC average annual active mode hours	2613	h/year
Laptop PC average annual standby mode hours	2995	h/year

4. Default lifetimes

Energy efficiency improvement measure or programme by sector and type	Default lifetime in years
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³⁶ General Lighting Service or tungsten filament lamps

Household sector – technical measures or programmes	
Insulation: building envelope – cavity wall and other insulation (solid, wool, etc.)	30
Insulation: building envelope – loft/ roof and floor insulation	25
Draught proofing: Material that fills gaps around doors, windows etc. to increase the air-tightness of buildings	5
Windows/glazing with low U value	30
New hot water storage tank with foam insulation	15
Insulation of hot water pipes, with material on unexposed hot water pipes	20
Heat reflecting radiator panels: Insulation material installed between radiators and the wall to reflect heat back into the room	18
Small boilers up to 30 kW output	20
Large boilers above 30 kW output	25
Heating control: timing devices, thermostats and radiator valve thermostatic controls	10
Heat recovery systems for recovering and recirculation of heat	17
Hot water saving faucets with flow restrictors	15
Energy efficient (class A or above) room air-conditioner	15
Energy efficient (class A or above) cold appliances (e.g. refrigerators, freezers)	15
Energy efficient (class A or above) wet appliances (e.g. dish washers, washing machines and tumble driers)	12
Energy efficient compact fluorescent light bulbs for household use	6
Energy efficient shower heads	3
Energy efficient architecture (e.g. optimisation of the thermal properties of building materials, orientation of building to natural light and heat sources, use of natural ventilation)	25
Household sector – Organisational measures or programmes	

Hydraulic balancing of heating adjusting household heating system so that hot water for heat is distributed between rooms in an optimal balance	10
Household sector – Behavioural measures or programmes	
Information campaigns	2
Electricity savings (e.g. switching off lights in empty rooms, turning off electronic devices)	3
Heat savings (e.g. turning heating off or down in rooms not in use)	3
Commercial/ Public sector – Technical measures or programmes	
Windows/glazing with low U value	30
Insulation: building envelope (cavity wall and solid insulation on wall loft/roof insulation and floor)	25
Energy efficient architecture (e.g. optimisation of the thermal properties of building materials, orientation of building to natural light and heat sources, use of natural ventilation)	25
Energy efficient central air-conditioners and chillers	17
Efficient ventilation systems (mechanically controlled system extracting foul air for ventilation, and supplying new preheated air in the principal parts by means of blowing inlets)	15
Commercial refrigeration	8
Motion detection light controls switching off lights when nobody is present	10
Energy efficient lighting systems in new or renovated offices	12
Energy efficient lighting systems for public spaces (e.g. roads)	15
Boilers with an output larger than 30 kW	25
Industry sector – Technical measures or programmes	
Efficient compressed air systems:	15
Efficient electric motors and variable speed drives	12
Efficient pumping systems in industrial processes	15

Efficient ventilation systems for industrial buildings	15
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ANNEX III

Minimum requirements for metering of individual energy consumption and the frequency of billing based on actual consumption

1. Minimum requirements for metering of individual energy consumption

1.1. Individual meters

When an individual meter is installed, Member States shall ensure that it is connected to an interface which provides secure communication to the final customer, enabling the meter to export private metrological data to the final customer or a third party designated by the final customer.

The interface shall provide private information enabling final customers to better control their energy consumption and use the information for further potential analysis. Such information shall at least indicate current rate of consumption (e.g. kWh, kJ, m³);

The National Regulatory Authority shall ensure that the interface also provides public data that allows the final customer to consult and use the applicable time-of-use tariffs with real-time pricing, peak time pricing and peak time rebates.

The private data exported through the interface shall offer the final customer a possibility to consult his/her historic consumption levels (in kWh and local currency):

- a) in the last seven days, day by day;
- b) in the last complete week;
- c) in the last complete month;
- d) in the last complete month the previous year.

The historic periods shall match the billing periods for consistency with household bills.

1.2. Heat costs allocators

The heat cost allocators shall be equipped with clearly legible displays allowing the final customer to consult the current rate of consumption as well as the historic consumption levels. The historic periods displayed by the heat cost allocator shall match the billing periods.

2. Minimum requirements for billing

2.1 Minimum information contained in the bill

Member States shall ensure that the following information is made available to final customers in clear and understandable terms in or with their bills, contracts, transactions, and/or receipts at distribution stations:

- (a) current actual prices and actual consumption of energy;
- (b) comparisons of the final customer's current energy consumption with consumption for the same period in the previous year, preferably in graphic form;

- (c) comparisons with an average normalised or benchmarked final customer in the same user category;
- (d) contact information for final customers' organisations, energy agencies or similar bodies, including website addresses, from which information may be obtained on available energy efficiency improvement measures, comparative end-user profiles and/or objective technical specifications for energy-using equipment.

2.2. Frequency of billing based on actual consumption

In order to enable final customers to regulate their own energy consumption, billing on the basis of actual consumption shall be performed with the following frequency:

- a) On monthly basis for electricity consumption.
- b) At least every two months for the consumption of natural gas. Where gas is used for individual heating, billing shall be provided on monthly basis.
- c) With centralised heating and cooling, billing shall be provided on a monthly basis during heating/cooling season.
- d) At least every two months for hot water billing.

Billing based on the measurements of heat consumption using heat cost allocators shall be accompanied with explanations on the numbers available through displays of heat cost allocators, taking into account the standard characteristics for heat cost allocators (EN 834)³⁷.

³⁷ EN 834 Standard on heat cost allocators for the determination of the consumption of room heating radiators - appliances with electrical energy supply.

ANNEX IV
Planning for efficiency in heating and cooling

1. The national heating and cooling plans referred to in Article 9(1) shall include:
 - (a) a description of heating and cooling demand;
 - (b) a forecast of how this demand will change in the next 10 years;
 - (c) a map of the national territory, identifying:
 - (i) heating and cooling demand points, including:
 - municipalities and conurbations with a plot ratio of at least 0.3; and
 - industrial zones with a total annual heating and cooling consumption of more than 20 GWh;
 - (ii) existing and planned district heating and cooling infrastructure;
 - (iii) potential heating and cooling supply points, including:
 - power plants with a total annual electricity production of more than 20 GWh; and
 - waste incineration plants;
 - existing and planned cogeneration plants, classified according to Annex VII, and district heating plants.
 - (d) identification of the heating and cooling demand that could be satisfied by high-efficiency cogeneration, including residential micro-cogeneration, and by district heating and cooling;
 - (e) identification of the potential for additional high-efficiency cogeneration, including from refurbishment of existing capacity and construction of new capacity;
 - (f) measures to be adopted up to 2020 and up to 2030 to realise the potential in (e) in order to meet the demand in (d), including:
 - (i) measures to increase the share of cogeneration in heating and cooling production and in electricity production; and
 - (ii) measures to develop district heating and cooling infrastructure;
 - (g) an estimate of the primary energy to be saved.
2. To the extent appropriate, the plan may be made up of an assembly of regional or local plans.
3. Urban spatial plans shall be designed to ensure that:

- a) new thermal electricity generating installations and industrial plants producing waste heat are located in sites where a maximum amount of the available waste heat will be recovered to meet existing or forecasted heat and cooling demand;
- b) new residential zones or new industrial plants which consume heat in their production processes are located in sites where a maximum amount of their heat demand will be met by the available waste heat, as identified in national heating and cooling plans. To ensure an optimal matching between demand and supply for heat and cooling, spatial plans shall favour the clustering of a number of industrial plants in the same location;
- c) thermal electricity generating installations, industrial plants producing waste heat, waste incineration plants and other waste-to-energy plants are connected to the local district heating or cooling network;
- d) residential zones and industrial plants which consume heat in their production processes are connected to the local district heating or cooling network.

ANNEX V

General principles for the calculation of electricity from cogeneration

Values used for calculation of electricity from cogeneration shall be determined on the basis of the expected or actual operation of the unit under normal conditions of use. For micro-cogeneration units the calculation may be based on certified values.

- (a) Electricity production from cogeneration shall be considered equal to total annual electricity production of the unit measured at the station boundary and should be net output.
- (i) in cogeneration units of type (b), (d), (e), (f), (g) and (h) referred to in Annex VII, with an annual overall efficiency set by Member States at a level of at least 75%, and
- (ii) in cogeneration units of type (a) and (c) referred to in Annex VII with an annual overall efficiency set by Member States at a level of at least 80%.
- (b) In cogeneration units with an annual overall efficiency below the value referred to in paragraph (a) (i) (cogeneration units of type (b), (d), (e), (f), (g), and (h) referred to in Annex VII) or with an annual overall efficiency below the value referred to in paragraph (a) (ii) cogeneration units of type (a) and (c) referred to in Annex VII) cogeneration is calculated according to the following formula:

$$E_{\text{CHP}} = H_{\text{CHP}} * C$$

where:

E_{CHP} is the amount of electricity from cogeneration

H_{CHP} is the amount of heat from cogeneration

C is the power to heat ratio

E_{chp} is the amount of useful heat from cogeneration (calculated for this purpose as total heat production minus any heat produced in separate boilers or by live steam extraction from the steam generator before the turbine).

The calculation of electricity from cogeneration must be based on the actual power to heat ratio. If the actual power to heat ratio of a cogeneration unit is not known, the following default values may be used, notably for statistical purposes, for units of type (a), (b), (c), (d), and (e) referred to in Annex VII provided that the calculated cogeneration electricity is less or equal to total electricity production of the unit:

Type of the unit	Default power to heat ratio, C
Combined cycle gas turbine with heat recovery	0,95

Steam back pressure turbine	0,45
Steam condensing extraction turbine	0,45
Gas turbine with heat recovery	0,55
Internal combustion engine	0,75

If Member States introduce default values for power to heat ratios for units of type (f), (g), (h), (i), (j) and (k) referred to in Annex VII, such default values shall be published and shall be notified to the Commission.

- (d) If a share of the energy content of the fuel input to the cogeneration process is recovered in chemicals and recycled this share can be subtracted from the fuel input before calculating the overall efficiency used in paragraphs (a) and (b).
- (e) Member States may determine the power to heat ratio as the ratio between electricity and useful heat when operating in cogeneration mode at a lower capacity using operational data of the specific unit.
- (f) Member States may use other reporting periods than one year for the purpose of the calculations according to paragraphs (a) and (b).

ANNEX VI

Methodology for determining the efficiency of the cogeneration process

Values used for calculation of efficiency of cogeneration and primary energy savings shall be determined on the basis of the expected or actual operation of the unit under normal conditions of use.

(a) *High-efficiency cogeneration*

For the purpose of this Directive high-efficiency cogeneration shall fulfil the following criteria:

- cogeneration production from cogeneration units shall provide primary energy savings calculated according to point (b) of at least 10 % compared with the references for separate production of heat and electricity,
- production from small scale and micro cogeneration units providing primary energy savings may qualify as high-efficiency cogeneration.

(b) *Calculation of primary energy savings*

The amount of primary energy savings provided by cogeneration production defined in accordance with Annex V shall be calculated on the basis of the following formula:

$$PES = \left[1 - \frac{1}{\frac{CHP H\eta}{Ref H\eta} + \frac{CHP E\eta}{Ref E\eta}} \right] \times 100 \%$$

Where:

PES is primary energy savings.

CHP $H\eta$ is the heat efficiency of the cogeneration production defined as annual useful heat output divided by the fuel input used to produce the sum of useful heat output and electricity from cogeneration.

Ref $H\eta$ is the efficiency reference value for separate heat production.

CHP $E\eta$ is the electrical efficiency of the cogeneration production defined as annual electricity from cogeneration divided by the fuel input used to produce the sum of useful heat output and electricity from cogeneration. Where a cogeneration unit generates mechanical energy, the annual electricity from cogeneration may be increased by an additional element representing the amount of electricity which is equivalent to that of mechanical energy. This additional element will not create a right to issue guarantees of origin in accordance with Article 9(7).

Ref E_{η} is the efficiency reference value for separate electricity production.

(c) *Calculations of energy savings using alternative calculation*

Member States may calculate primary energy savings from a production of heat and electricity and mechanical energy as below without using Annex V to exclude the non-cogenerated heat and electricity parts of the same process. Such a production can be regarded as high-efficiency cogeneration provided it fulfils the efficiency criteria in (a) above and, for cogeneration units with an electrical capacity larger than 25MW, the overall efficiency is above 70%. However, specification of the quantity of electricity from cogeneration produced in such a production, for issuing a guarantee of origin and for statistical purposes, shall be determined in accordance with Annex V.

If primary energy savings using alternative calculation as above the primary energy savings shall be calculated using the formula in paragraph (b) of this Annex replacing:

‘CHPH η ’ with ‘H η ’ and

‘CHPE η ’ with ‘E η ’,

where:

H η shall mean the heat efficiency of the process, defined as the annual heat output divided by the fuel input used to produce the sum of heat output and electricity output.

E η shall mean the electricity efficiency of the process, defined as the annual electricity output divided by the fuel input used to produce the sum of heat output and electricity output. Where a cogeneration unit generates mechanical energy, the annual electricity from cogeneration maybe increased by an additional element representing the amount of electricity which is equivalent to that of mechanical energy. This additional element will not create a right to issue guarantees of origin in accordance with Article 9(7).

- (d) Member States may use other reporting periods than one year for the purpose of the calculations according to paragraph (b) of this Annex.
- (e) For micro-cogeneration units the calculation of primary energy savings may be based on certified data.
- (f) *Efficiency reference values for separate production of heat and electricity*

The harmonised efficiency reference values for separate production of heat and electricity have been established by the Commission Decision 2007/74/EC. The Commission shall, in accordance with the procedure referred to in Article 17, review the harmonised efficiency reference values for the first time on 1 January 2015, and every four years thereafter.

These harmonised efficiency reference values shall consist of a matrix of values differentiated by relevant factors, including year of construction and types of fuel, and must be based on a well-documented analysis taking, inter alia, into account data from operational use under realistic conditions, cross-border exchange of electricity, fuel mix and climate conditions as well as applied cogeneration technologies in accordance with the principles in Annex VII.

The principles for defining the efficiency reference values for separate production of heat and electricity referred to in subparagraph 1 and in the formula set out in paragraph (b) of this Annex shall establish the operating efficiency of the separate heat and electricity production that cogeneration is intended to substitute.

The efficiency reference values shall be calculated according to the following principles:

1. For cogeneration units as defined in Article 2(26) the comparison with separate electricity production shall be based on the principle that the same fuel categories are compared.
2. Each cogeneration unit shall be compared with the best available and economically justifiable technology for separate production of heat and electricity on the market in the year of construction of the cogeneration unit.
3. The efficiency reference values for cogeneration units older than 10 years of age shall be fixed on the reference values of units of 10 years of age.
4. The efficiency reference values for separate electricity production and heat production shall reflect the climatic differences between Member States.

ANNEX VII
Cogeneration technologies covered by this Directive

- (a) Combined cycle gas turbine with heat recovery
- (b) Steam backpressure turbine
- (c) Steam condensing extraction turbine
- (d) Gas turbine with heat recovery
- (e) Internal combustion engine
- (f) Microturbines
- (g) Stirling engines
- (h) Fuel cells
- (i) Steam engines
- (j) Organic Rankine cycles
- (k) Any other type of technology or combination thereof falling under the definition laid down in Article 2 (22).

ANNEX VIII

Guarantee of origin for electricity produced from high-efficiency cogeneration

- a) Member States shall take measures to ensure that:
- i) the guarantee of origin of the electricity produced from high-efficiency cogeneration:
 - enable producers to demonstrate that the electricity they sell is produced from high-efficiency cogeneration and is issued to this effect in response to a request from the producer;
 - is accurate, reliable and fraud-resistant;
 - is issued, transferred and cancelled electronically;
 - ii) the same unit of energy from high-efficiency cogeneration is taken into account only once.
- b) The guarantee of origin referred to in Article 9(8) shall at least contain at least the following information:
- the identity, location, type and capacity (thermal and electrical) of the installation where the energy was produced;
 - the dates and places of production;
 - the lower calorific value of the fuel source from which the electricity was produced;
 - the quantity and the use of the heat generated together with the electricity;
 - the quantity of electricity from high efficiency cogeneration in accordance with Annex VI that the guarantee represents;
 - the primary energy savings calculated in accordance with Annex VI based on the harmonised efficiency reference values indicated in Annex VI paragraph (f);
 - the nominal electric and thermal efficiency of the plant;
 - whether and to what extent the installation has benefited from investment support;
 - whether and to what extent the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme;
 - the date on which the installation became operational; and
 - the date and country of issue and a unique identification number.

Member States shall mutually recognise their guarantees of origin, exclusively as proof of the information referred to in this paragraph. Any refusal to recognise a guarantee of origin as such proof, in particular for reasons relating to the prevention of fraud, must be based on objective, transparent and non-discriminatory criteria. In the event of refusal to recognise a guarantee of origin, the Commission may compel the refusing party to recognise it, particularly with regard to objective, transparent and non-discriminatory criteria on which such recognition is based.

ANNEX IX
Annual inventory of energy efficiency data of energy generation plants

The annual inventories referred to in Article 10(1) shall include:

- a) a non-nominative list of electricity only generation units above 50 MW indicating for each:
- plant electrical output /the capacity (MW_e);
 - primary fuel and fuel mix (if applicable)
 - plant type and technology;
 - design efficiency;
 - operation start date);
 - date of last substantial refurbishment;
 - operation hours;
 - operational efficiency.
- b) a non-nominative list of heat only boilers above 50 MW indicating for each plant:
- plant thermal output / capacity (MW_{th});
 - primary fuel and fuel mix (if applicable)
 - plant type and technology;
 - design efficiency;
 - operation start date;
 - date of last substantial refurbishment;
 - operation hours;
 - operational efficiency
- c) a non-nominative list of cogeneration units above 50 MW indicating for each:
- plant electrical and thermal output / capacity (MW_e and MW_{th});
 - primary fuel and fuel mix (if applicable)
 - plant type and technology;
 - design efficiency;
 - operation start date;

- date of last substantial refurbishment;
- operation hours;
- operational efficiency.

ANNEX X

Energy efficiency criteria for energy network regulation and for network tariffs set or approved by energy regulatory authorities

1. Network tariffs shall accurately reflect electricity and cost savings in networks achieved from demand side and demand response measures and distributed generation, including savings from lowering the cost of delivery or of network investment and a more optimal operation of the network.
2. Network regulation and tariffs shall allow network operators to offer system services and system tariffs for demand response measures, demand management and distributed generation on organised electricity markets, in particular:
 - a) the shifting of the load from peak to off-peak times by final customers taking into account the availability of renewable energy, energy from cogeneration and distributed generation;
 - b) energy savings from demand response of distributed consumers by integrators;
 - c) demand reduction from energy efficiency measures undertaken by energy service companies and ESCOs;
 - d) the connection and dispatch of generation sources at lower voltage levels;
 - e) the connection of generation sources from closer location to the consumption; and
 - f) the storage of energy.

For the purposes of this provision the term "organised electricity markets" shall include over-the-counter markets and electricity exchanges for trading energy, capacity, balancing and ancillary services in all timeframes, including forward, day-ahead and intra-day markets.

3. Network tariffs shall be available that support dynamic pricing for demand response measures by final customers, including:
 - a) time-of-use tariffs;
 - b) critical peak pricing;
 - c) real time pricing; and
 - d) peak time rebates.

ANNEX XI

Energy efficiency requirements for transmission system operators and distribution system operators

1. Operators shall, subject to requirements relating to the maintenance of the reliability and safety of the grid, based on transparent and non-discriminatory criteria defined by the competent national authorities:
 - a) guarantee the transmission and distribution of electricity from high efficiency cogeneration;
 - b) provide priority or guaranteed access to the grid of electricity from high efficiency cogeneration;
 - c) when dispatching electricity generating installations, provide priority dispatch of electricity from high efficiency cogeneration.

2. Operators shall:
 - a) set up and publish their standard rules on bearing and sharing the costs of grid connection and grid reinforcements for electricity from high efficiency cogeneration;
 - b) provide comprehensive information necessary to connect new high efficiency cogeneration electricity producers. This information shall include cost estimates, a timetable for processing the connection request and a timetable for grid connections. The overall process to become connected to the grid should be no longer than 6 months;
 - c) provide standardised and simplified procedures for the connection of distributed high efficiency cogeneration producers to facilitate their connection to the grid;

3. Operators shall:
 - a) set up and make public their standard rules relating to the bearing and sharing of costs of technical adaptations, such as grid connections and grid reinforcements, improved operation of the grid and rules on the non-discriminatory implementation of the grid codes, which are necessary in order to integrate new producers feeding electricity produced from high efficiency cogeneration into the interconnected grid;
 - b) provide any new producer of electricity produced from high-efficiency cogeneration wishing to be connected to the system with the information required, including:
 - (i) a comprehensive and detailed estimate of the costs associated with the connection;
 - (ii) a reasonable and precise timetable for receiving and processing the request for grid connection;

(iii) a reasonable indicative timetable for any proposed grid connection.

The standard rules referred to in a) shall be based on objective, transparent and non-discriminatory criteria taking particular account of all the costs and benefits associated with the connection of those producers to the grid. They may provide for different types of connection.

4. Member States may allow producers of electricity from high-efficiency cogeneration wishing to be connected to the grid to issue a call for tender for the connection work.

ANNEX XII
Energy content of selected fuels for end use –conversion table³⁸

Energy commodity	kJ (NCV)	kgoe (NCV)	kWh (NCV)
1 kg coke	28500	0,676	7,917
1 kg hard coal	17200 — 30700	0,411 — 0,733	4,778 — 8,528
1 kg brown coal briquettes	20000	0,478	5,556
1 kg black lignite	10500 — 21000	0,251 — 0,502	2,917 — 5,833
1 kg brown coal	5600 — 10500	0,134 — 0,251	1,556 — 2,917
1 kg oil shale	8000 — 9000	0,191 — 0,215	2,222 — 2,500
1 kg peat	7800 — 13800	0,186 — 0,330	2,167 — 3,833
1 kg peat briquettes	16000 — 16800	0,382 — 0,401	4,444 — 4,667
1 kg residual fuel oil (heavy oil)	40000	0,955	11,111
1 kg light fuel oil	42300	1,010	11,750
1 kg motor spirit (petrol)	44000	1,051	12,222
1 kg paraffin	40000	0,955	11,111
1 kg liquefied petroleum gas	46000	1,099	12,778
1 kg natural gas ^[1]	47200	1,126	13,10
1 kg liquefied natural gas	45190	1,079	12,553
1 kg wood (25 % humidity) ^[2]	13800	0,330	3,833
1 kg pellets/wood bricks	16800	0,401	4,667
1 kg waste	7400 — 10700	0,177 — 0,256	2,056 — 2,972
1 MJ derived heat	1000	0,024	0,278
1 kWh electrical energy	3600	0,086	1 ^[3]

Source: Eurostat.

[1] 93 % methane.

[2] Member States may apply other values depending on the type of wood most used in the respective Member State.

[3] For savings in kWh electricity Member States may apply a default co-efficient of 2,5 reflecting the estimated 40 % average EU generation efficiency during the target period. Member States may apply a different co-efficient provided they can justify it.

³⁸ Member States may apply different conversion factors if these can be justified.

ANNEX XIII
General framework for supplementary reports

The reports referred to in Article 20(4) shall provide a framework for the development of national energy efficiency strategies.

The reports shall cover all energy efficiency improvement measures and expected/achieved energy savings, including those in the supply, transmission and distribution of energy as well as energy end-use. Member States shall ensure that the reports include the following minimum information:

1. Targets and strategies

- The national energy efficiency target for 2020 as required by Article 3(1);
- The national indicative energy savings target set in Article 4(1) of Directive 2006/32/EC;
- Other existing energy efficiency targets addressing the whole economy or only a certain sector/sub-sector.

2. Measures and energy savings

The reports shall provide information on measures adopted or planned to be adopted in view of implementing the main elements of this Directive and on their related savings.

a) Primary energy savings

The reports shall collect a list of all measures and actions taken towards primary energy savings in all sectors of the economy. For every measure or package of measures/actions estimations of expected savings for 2020 and savings achieved by the time of the reporting shall be provided.

Where available, information on other impacts/benefits of the measures (greenhouse gases emissions reduction, improved air quality, job creation, etc.) and the budget for the implementation should be provided.

b) Final energy savings

The first and second supplementary report shall include the results with regard to the fulfilment of the final energy savings target set out in Article 4(1) and (2) the Directive 2006/32/EC. If calculation/estimation of savings per measure is not available, sector level energy reduction shall be shown due to (the combination) of measures.

The first and second reports shall also include measurement and/or calculation methodology for calculating the energy savings. If the "recommended methodology"³⁹ is applied, the report should provide references to this.

³⁹ Recommendations on Measurement and Verification Methods in the framework of the Directive 2006/32/EC on Energy End-Use Efficiency and Energy Services.

3. Specific information related to provisions from this Directive

a) Public bodies (Article 4)

Supplementary reports shall include the number of public bodies and the number of municipalities having developed an energy efficiency plan in accordance with Article 4(3).

b) Energy audits and management systems (Article 7)

Supplementary reports shall include:

- the total number of energy audits carried out in the previous 3-year period;
- the number of energy audits carried out in large enterprises in the previous 3-year period;
- the number of large companies in their territory, with indication of the number of those ones to which Article 7(3) is applicable.

c) Promotion of efficiency heating and cooling (Article 9)

Supplementary reports shall include:

- the conditions or an update of the conditions for the exemption from the application of Article 9(5)
- an assessment of the progress achieved in implementing the national heating and cooling plan referred to in Article 9(1).

d) Energy generation (Article 10)

- Supplementary reports shall include a summary of the inventories of energy efficiency data referred to in Article 10(1), in accordance with the requirements set in Annex IX.

e) Energy transmission and distribution (Article 11)

- The first supplementary report and the subsequent reports due every 10 years thereafter shall include the plans for energy efficiency potentials of gas and electricity infrastructure referred to in Article 11(2).

f) Availability of certification schemes (Article 12)

Supplementary reports shall include information on the available national certification schemes or equivalent qualification schemes for the providers of energy services, energy audits and energy efficiency improvement measures.

g) Energy Services (Article 13)

Supplementary reports shall include:

- an internet link to the website where the national lists and registers of energy services providers referred to in Article 13(1)(a) can be accessible.

h) Other measures to promote energy efficiency (Article 14)

The first supplementary report shall include a list of the measures referred to in Article 14(2).

ANNEX XIV

PART A

Repealed Directives with their successive amendments

Directive 2006/32/EC of the European Parliament and of the Council (OJ L 114, 27.4.2006, p.64)

Regulation (EC) No 1137/2008 of the European Parliament

and of the Council (OJ L 311, 21.11.2008, p.1), only point 9.14

Directive 2004/8/EC of the European Parliament and of the Council (OJ L 52, 21.2.2004, p.50)

Regulation (EC) No 219/2009 of the European Parliament

and of the Council (OJ L 87, 31.3.2009, p.109), only point 7.6

PART B

Time limits for transposition into national law

Directive	Time limit for transposition
2006/32/EC	17 May 2008
2004/8/EC	21 February 2006

ANNEX XV
Correlation table

To be added.