

## I

(Legislative acts)

## DIRECTIVES

## DIRECTIVE 2012/27/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 25 October 2012

on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and 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 European Commission,

After transmission of the draft legislative act to the national parliaments,

Having regard to the opinion of the European Economic and Social Committee <sup>(1)</sup>,

Having regard to the opinion of the Committee of the Regions <sup>(2)</sup>,

Acting in accordance with the ordinary legislative procedure <sup>(3)</sup>,

Whereas:

(1) The Union is facing unprecedented challenges resulting from increased dependence on energy imports and scarce energy resources, and the need to limit climate change and to overcome the economic crisis. Energy efficiency is a valuable means to address these challenges. It improves the Union's security of supply by reducing primary energy consumption and decreasing energy imports. It helps to reduce greenhouse gas emissions in a cost-effective way and thereby to mitigate climate change.

Shifting to a more energy-efficient economy should also accelerate the spread of innovative technological solutions and improve the competitiveness of industry in the Union, boosting economic growth and creating high quality jobs in several sectors related to energy efficiency.

(2) The Conclusions of the European Council of 8 and 9 March 2007 emphasised the need to increase energy efficiency in the Union to achieve the objective of saving 20 % of the Union's primary energy consumption by 2020 compared to projections. The conclusions of the European Council of 4 February 2011 emphasised that the 2020 20 % energy efficiency target as agreed by the June 2010 European Council, which is presently not on track, must be delivered. Projections made in 2007 showed a primary energy consumption in 2020 of 1 842 Mtoe. A 20 % reduction results in 1 474 Mtoe in 2020, i.e. a reduction of 368 Mtoe as compared to projections.

(3) The Conclusions of the European Council of 17 June 2010 confirmed the energy efficiency target as one of the headline targets of the Union's new strategy for jobs and smart, sustainable and inclusive growth ('Europe 2020 Strategy'). Under this process and in order to implement this objective at national level, Member States are required to set national targets in close dialogue with the Commission and to indicate, in their National Reform Programmes, how they intend to achieve them.

(4) The Commission Communication of 10 November 2010 on Energy 2020 places energy efficiency at the core of the Union energy strategy for 2020 and outlines the need for a new energy efficiency strategy that will enable all Member States to decouple energy use from economic growth.

<sup>(1)</sup> OJ C 24, 28.1.2012, p. 134.

<sup>(2)</sup> OJ C 54, 23.2.2012, p. 49.

<sup>(3)</sup> Position of the European Parliament of 11 September 2012 (not yet published in the Official Journal) and decision of the Council of 4 October 2012.

- (5) In its resolution of 15 December 2010 on the Revision of the Energy Efficiency Action Plan, the European Parliament called on the Commission to include in its revised Energy Efficiency Action Plan measures to close the gap to reach the overall Union energy efficiency objective in 2020.
- (6) One of the initiatives of the Europe 2020 Strategy is the flagship resource-efficient Europe adopted by the Commission on 26 January 2011. This identifies energy efficiency as a major element in ensuring the sustainability of the use of energy resources.
- (7) The Conclusions of the European Council of 4 February 2011 acknowledged that the Union energy efficiency target is not on track and that determined action is required to tap the considerable potential for higher energy savings in buildings, transport, products and processes. Those conclusions also provide that the implementation of the Union energy efficiency target will be reviewed by 2013 and further measures considered if necessary.
- (8) On 8 March 2011, the Commission adopted its Communication on an Energy Efficiency Plan 2011. The Communication confirmed that the Union is not on track to achieve its energy efficiency target. This is despite the progress in national energy efficiency policies outlined in the first National Energy Efficiency Action Plans submitted by Member States in fulfilment of the requirements of Directive 2006/32/EC of the European Parliament and of the Council of 5 April 2006 on energy end-use efficiency and energy services<sup>(1)</sup>. Initial analysis of the second Action Plans confirms that the Union is not on track. To remedy that, the Energy Efficiency Plan 2011 spelled out a series of energy efficiency policies and measures covering the full energy chain, including energy generation, transmission and distribution; the leading role of the public sector in energy efficiency; buildings and appliances; industry; and the need to empower final customers to manage their energy consumption. Energy efficiency in the transport sector was considered in parallel in the White Paper on Transport, adopted on 28 March 2011. In particular, Initiative 26 of the White Paper calls for appropriate standards for CO<sub>2</sub> emissions of vehicles in all modes, where necessary supplemented by requirements on energy efficiency to address all types of propulsion systems.
- (9) On 8 March 2011, the Commission also adopted a Roadmap for moving to a competitive low carbon economy in 2050, identifying the need from this perspective for more focus on energy efficiency.
- (10) In this context it is necessary to update the Union's legal framework for energy efficiency with a Directive pursuing the overall objective of the energy efficiency target of saving 20 % of the Union's primary energy consumption by 2020, and of making further energy efficiency improvements after 2020. To that end, this Directive should establish a common framework to promote energy efficiency within the Union and lay down specific actions to implement some of the proposals included in the Energy Efficiency Plan 2011 and achieve the significant unrealised energy saving potentials it identifies.
- (11) Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community's greenhouse gas emission reduction commitments up to 2020<sup>(2)</sup> requires the Commission to assess and report by 2012 on the progress of the Union and its Member States towards the objective of reducing energy consumption by 20 % by 2020 compared to projections. It also states that, to help Member States meet the Union's greenhouse gas emission reduction commitments, the Commission should propose, by 31 December 2012, strengthened or new measures to accelerate energy efficiency improvements. This Directive responds to this requirement. It also contributes to meeting the goals set out in the Roadmap for moving to a competitive low carbon economy in 2050, in particular by reducing greenhouse gas emissions from the energy sector, and to achieving zero emission electricity production by 2050.
- (12) An integrated approach has to be taken to tap all the existing energy saving potential, encompassing savings in the energy supply and the end-use sectors. At the same time, the provisions of Directive 2004/8/EC of the European Parliament and of the Council of 11 February 2004 on promotion of cogeneration based on a useful heat demand in the internal energy market<sup>(3)</sup> and Directive 2006/32/EC should be strengthened.

<sup>(1)</sup> OJ L 114, 27.4.2006, p. 64.

<sup>(2)</sup> OJ L 140, 5.6.2009, p. 136.

<sup>(3)</sup> OJ L 52, 21.2.2004, p. 50.

- (13) It would be preferable for the 20 % energy efficiency target to be achieved as a result of the cumulative implementation of specific national and European measures promoting energy efficiency in different fields. Member States should be required to set indicative national energy efficiency targets, schemes and programmes. These targets and the individual efforts of each Member State should be evaluated by the Commission, alongside data on the progress made, to assess the likelihood of achieving the overall Union target and the extent to which the individual efforts are sufficient to meet the common goal. The Commission should therefore closely monitor the implementation of national energy efficiency programmes through its revised legislative framework and within the Europe 2020 process. When setting the indicative national energy efficiency targets, Member States should be able to take into account national circumstances affecting primary energy consumption such as remaining cost-effective energy-saving potential, changes in energy imports and exports, development of all sources of renewable energies, nuclear energy, carbon capture and storage, and early action. When undertaking modelling exercises, the Commission should consult Member States on model assumptions and draft model results in a timely and transparent manner. Improved modelling of the impact of energy efficiency measures and of the stock and performance of technologies is needed.
- (14) Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources<sup>(1)</sup> states that Cyprus and Malta, due to their insular and peripheral character, rely on aviation as a mode of transport, which is essential for their citizens and their economy. As a result, Cyprus and Malta have a gross final consumption of energy in national air transport which is disproportionately high, i.e. more than three times the Community average in 2005, and are thus disproportionately affected by the current technological and regulatory constraints.
- (15) The total volume of public spending is equivalent to 19 % of the Union's gross domestic product. For this reason the public sector constitutes an important driver to stimulate market transformation towards more efficient products, buildings and services, as well as to trigger behavioural changes in energy consumption by citizens and enterprises. Furthermore, decreasing energy consumption through energy efficiency improvement measures can free up public resources for other purposes. Public bodies at national, regional and local level should fulfil an exemplary role as regards energy efficiency.
- (16) Bearing in mind that the Council conclusions of 10 June 2011 on the Energy Efficiency Plan 2011 stressed that buildings represent 40 % of the Union's final energy consumption, and in order to capture the growth and employment opportunities in the skilled trades and construction sectors, as well as in the production of construction products and in professional activities such as architecture, consultancy and engineering, Member States should establish a long-term strategy beyond 2020 for mobilising investment in the renovation of residential and commercial buildings with a view to improving the energy performance of the building stock. That strategy should address cost-effective deep renovations which lead to a refurbishment that reduces both the delivered and the final energy consumption of a building by a significant percentage compared with the pre-renovation levels leading to a very high energy performance. Such deep renovations could also be carried out in stages.
- (17) The rate of building renovation needs to be increased, as the existing building stock represents the single biggest potential sector for energy savings. Moreover, buildings are crucial to achieving the Union objective of reducing greenhouse gas emissions by 80-95 % by 2050 compared to 1990. Buildings owned by public bodies account for a considerable share of the building stock and have high visibility in public life. It is therefore appropriate to set an annual rate of renovation of buildings owned and occupied by central government on the territory of a Member State to upgrade their energy performance. This renovation rate should be without prejudice to the obligations with regard to nearly-zero energy buildings set in Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings<sup>(2)</sup>. The obligation to renovate central government buildings in this Directive complements that Directive, which requires Member States to ensure that when existing buildings undergo major renovation their energy performance is upgraded so that they meet minimum energy performance requirements. It should be possible for Member States to take alternative cost-efficient measures to achieve an equivalent improvement of the energy performance of the buildings within their central government estate. The obligation to renovate floor area of central government buildings should apply to the administrative departments whose competence extends over the whole territory of a Member State. When in a given Member State and for a given competence no such relevant administrative department exists that covers the whole territory, the obligation should apply to those administrative departments whose competences cover collectively the whole territory.

<sup>(1)</sup> OJ L 140, 5.6.2009, p. 16.

<sup>(2)</sup> OJ L 153, 18.6.2010, p. 13.

- (18) A number of municipalities and other public bodies in the Member States have already put into place integrated approaches to energy saving and energy supply, for example via sustainable energy action plans, such as those developed under the Covenant of Mayors initiative, and integrated urban approaches which go beyond individual interventions in buildings or transport modes. Member States should encourage municipalities and other public bodies to adopt integrated and sustainable energy efficiency plans with clear objectives, to involve citizens in their development and implementation and to adequately inform them about their content and progress in achieving objectives. Such plans can yield considerable energy savings, especially if they are implemented by energy management systems that allow the public bodies concerned to better manage their energy consumption. Exchange of experience between cities, towns and other public bodies should be encouraged with respect to the more innovative experiences.
- (19) With regard to the purchase of certain products and services and the purchase and rent of buildings, central governments which conclude public works, supply or service contracts should lead by example and make energy-efficient purchasing decisions. This should apply to the administrative departments whose competence extends over the whole territory of a Member State. When in a given Member State and for a given competence no such relevant administrative department exists that covers the whole territory, the obligation should apply to those administrative departments whose competences cover collectively the whole territory. The provisions of the Union's public procurement directives should not however be affected. For products other than those covered by the energy efficiency requirements for purchasing in this Directive, Member States should encourage public bodies to take into account the energy efficiency of purchase.
- (20) An assessment of the possibility of establishing a 'white certificate' scheme at Union level has shown that, in the current situation, such a system would create excessive administrative costs and that there is a risk that energy savings would be concentrated in a number of Member States and not introduced across the Union. The objective of such a Union-level scheme could be better achieved, at least at this stage, by means of national energy efficiency obligation schemes for energy utilities or other alternative policy measures that achieve the same amount of energy savings. It is appropriate for the level of ambition of such schemes to be established in a common framework at Union level while providing significant flexibility to Member States to take fully into account the national organisation of market actors, the specific context of the energy sector and final customers' habits. The common framework should give energy utilities the option of offering energy services to all final customers, not only to those to whom they sell energy. This increases competition in the energy market because energy utilities can differentiate their product by providing complementary energy services. The common framework should allow Member States to include requirements in their national scheme that pursue a social aim, in particular in order to ensure that vulnerable customers have access to the benefits of higher energy efficiency. Member States should determine, on the basis of objective and non-discriminatory criteria, which energy distributors or retail energy sales companies should be obliged to achieve the end-use energy savings target laid down in this Directive.
- Member States should in particular be allowed not to impose this obligation on small energy distributors, small retail energy sales companies and small energy sectors to avoid disproportionate administrative burdens. The Commission Communication of 25 June 2008 sets out principles that should be taken into account by Member States that decide to abstain from applying this possibility. As a means of supporting national energy efficiency initiatives, obligated parties under national energy efficiency obligation schemes could fulfil their obligations by contributing annually to an Energy Efficiency National Fund an amount that is equal to the investments required under the scheme.
- (21) Given the over-arching imperative of restoring sustainability to public finances and of fiscal consolidation, in the implementation of particular measures falling within the scope of this Directive, due regard should be accorded to the cost-effectiveness at Member State level of implementing energy efficiency measures on the basis of an appropriate level of analysis and evaluation.
- (22) The requirement to achieve savings of the annual energy sales to final customers relative to what energy sales would have been does not constitute a cap on sales or energy consumption. Member States should be able to exclude all or part of the sales of energy, by volume, used in industrial 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 Community<sup>(1)</sup> for the calculation of the energy sales to final customers, as it is recognised that certain sectors or subsectors within these activities may be exposed to a significant risk of carbon leakage. It is appropriate that Member States are aware of the costs of schemes in order to be able to accurately assess the costs of measures.

<sup>(1)</sup> OJ L 275, 25.10.2003, p. 32.

- (23) Without prejudice to the requirements in Article 7 and with a view to limiting the administrative burden, each Member State may group all individual policy measures to implement Article 7 into a comprehensive national energy efficiency programme.
- (24) To tap the energy savings potential in certain market segments where energy audits are generally not offered commercially (such as small and medium-sized enterprises (SMEs)), Member States should develop programmes to encourage SMEs to undergo energy audits. Energy audits should be mandatory and regular for large enterprises, as energy savings can be significant. Energy audits should take into account relevant European or International Standards, such as EN ISO 50001 (Energy Management Systems), or EN 16247-1 (Energy Audits), or, if including an energy audit, EN ISO 14000 (Environmental Management Systems) and thus be also in line with the provisions of Annex VI to this Directive as such provisions do not go beyond the requirements of these relevant standards. A specific European standard on energy audits is currently under development.
- (25) Where energy audits are carried out by in-house experts, the necessary independence would require these experts not to be directly engaged in the activity audited.
- (26) When designing energy efficiency improvement measures, account should be taken of efficiency gains and savings obtained through the widespread application of cost-effective technological innovations such as smart meters. Where smart meters have been installed, they should not be used by companies for unjustified back billing.
- (27) In relation to electricity, and in accordance with Directive 2009/72/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity <sup>(1)</sup>, where the roll-out of smart meters is assessed positively, at least 80 % of consumers should be equipped with intelligent metering systems by 2020. In relation to gas, and in accordance with Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas <sup>(2)</sup>, where the roll-out of intelligent metering systems is assessed positively, Member States or any competent authority they designate, should prepare a timetable for the implementation of intelligent metering systems.
- (28) Use of individual meters or heat cost allocators for measuring individual consumption of heating in multi-apartment buildings supplied by district heating or common central heating is beneficial when final customers have a means to control their own individual consumption. Therefore, their use makes sense only in buildings where radiators are equipped with thermostatic radiator valves.
- (29) In some multi-apartment buildings supplied by district heating or common central heating, the use of accurate individual heat meters would be technically complicated and costly due to the fact that the hot water used for heating enters and leaves the apartments at several points. It can be assumed that individual metering of heat consumption in multi-apartment buildings is, nevertheless, technically possible when the installation of individual meters would not require changing the existing in-house piping for hot water heating in the building. In such buildings, measurements of individual heat consumption can then be carried out by means of individual heat cost allocators installed on each radiator.
- (30) Directive 2006/32/EC requires Member States to ensure that final customers are provided with competitively priced individual meters that accurately reflect their actual energy consumption and provide information on actual time of use. In most cases, this requirement is subject to the conditions that it should be technically possible, financially reasonable, and proportionate in relation to the potential energy savings. When a connection is made in a new building or a building undergoes major renovations, as defined in Directive 2010/31/EU, such individual meters should, however, always be provided. Directive 2006/32/EC also requires that clear billing based on actual consumption should be provided frequently enough to enable consumers to regulate their own energy use.
- (31) Directives 2009/72/EC and 2009/73/EC require Member States to ensure the implementation of intelligent metering systems to assist the active participation of consumers in the electricity and gas supply markets. As regards electricity, where the roll-out of smart meters is found to be cost-effective, at least 80 % of consumers must be equipped with intelligent metering systems by 2020. As regards natural gas, no deadline is given but the preparation of a timetable is required. Those Directives also state that final customers must be properly informed of actual electricity/gas consumption and costs frequently enough to enable them to regulate their own consumption.

<sup>(1)</sup> OJ L 211, 14.8.2009, p. 55.

<sup>(2)</sup> OJ L 211, 14.8.2009, p. 94.

- (32) The impact of the provisions on metering and billing in Directives 2006/32/EC, 2009/72/EC and 2009/73/EC on energy saving has been limited. In many parts of the Union, these provisions have not led to customers receiving up-to-date information about their energy consumption, or billing based on actual consumption at a frequency which studies show is needed to enable customers to regulate their energy use. In the sectors of space heating and hot water in multi-apartment buildings the insufficient clarity of these provisions has also led to numerous complaints from citizens.
- (33) In order to strengthen the empowerment of final customers as regards access to information from the metering and billing of their individual energy consumption, bearing in mind the opportunities associated with the process of the implementation of intelligent metering systems and the roll out of smart meters in the Member States, it is important that the requirements of Union law in this area be made clearer. This should help reduce the costs of the implementation of intelligent metering systems equipped with functions enhancing energy saving and support the development of markets for energy services and demand management. Implementation of intelligent metering systems enables frequent billing based on actual consumption. However, there is also a need to clarify the requirements for access to information and fair and accurate billing based on actual consumption in cases where smart meters will not be available by 2020, including in relation to metering and billing of individual consumption of heating, cooling and hot water in multi-unit buildings supplied by district heating/cooling or own common heating system installed in such buildings.
- (34) When designing energy efficiency improvement measures, Member States should take due account of the need to ensure the correct functioning of the internal market and the coherent implementation of the acquis, in accordance with the Treaty on the Functioning of the European Union.
- (35) High-efficiency cogeneration and district heating and cooling has significant potential for saving primary energy, which is largely untapped in the Union. Member States should carry out a comprehensive assessment of the potential for high-efficiency cogeneration and district heating and cooling. These assessments should be updated, at the request of the Commission, to provide investors with information concerning national development plans and contribute to a stable and supportive investment environment.
- New electricity generation installations and existing installations which are substantially refurbished or whose permit or licence is updated should, subject to a cost-benefit analysis showing a cost-benefit surplus, be equipped with high-efficiency cogeneration units to recover waste heat stemming from the production of electricity. This waste heat could then be transported where it is needed through district heating networks. The events that trigger a requirement for authorisation criteria to be applied will generally be events that also trigger requirements for permits under Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions <sup>(1)</sup> and for authorisation under Directive 2009/72/EC.
- (36) It may be appropriate for nuclear power installations, or electricity generation installations that are intended to make use of geological storage permitted under Directive 2009/31/EC of the European Parliament and of the Council of 23 April 2009 on the geological storage of carbon dioxide <sup>(2)</sup>, to be located in places where the recovery of waste heat through high-efficiency cogeneration or by supplying a district heating or cooling network is not cost-effective. Member States should therefore be able to exempt those installations from the obligation to carry out a cost-benefit analysis for providing the installation with equipment allowing the recovery of waste heat by means of a high-efficiency cogeneration unit. It should also be possible to exempt peak-load and back-up electricity generation installations which are planned to operate under 1 500 operating hours per year as a rolling average over a period of five years from the requirement to also provide heat.
- (37) It is appropriate for Member States to encourage the introduction of measures and procedures to promote cogeneration installations with a total rated thermal input of less than 20 MW in order to encourage distributed energy generation.
- (38) High-efficiency cogeneration should be defined by the energy savings obtained by combined production instead of separate production of heat and electricity. The definitions of cogeneration and high-efficiency cogeneration used in Union legislation should be without prejudice to the use of different definitions in national legislation for purposes other than those of the Union legislation in question. To maximise energy savings and avoid energy saving opportunities being missed, the greatest attention should be paid to the operating conditions of cogeneration units.

<sup>(1)</sup> OJ L 334, 17.12.2010, p. 17.

<sup>(2)</sup> OJ L 140, 5.6.2009, p. 114.

- (39) To increase transparency for the final customer to be able to choose between electricity from cogeneration and electricity produced by other techniques, the origin of high-efficiency cogeneration should be guaranteed on the basis of harmonised efficiency reference values. Guarantee of origin schemes 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.
- (40) The specific structure of the cogeneration and district heating and 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 associated networks, in application of the 'Think Small First' principle.
- (41) Most Union businesses are SMEs. They represent an enormous energy saving potential for the Union. To help them adopt energy efficiency measures, Member States should establish a favourable framework aimed at providing SMEs with technical assistance and targeted information.
- (42) Directive 2010/75/EU includes energy efficiency among the criteria for determining the Best Available Techniques that should serve as a reference for setting the permit conditions for installations within its scope, including combustion installations with a total rated thermal input of 50 MW or more. However, that Directive gives Member States the option not to impose requirements relating to energy efficiency on combustion units or other units emitting carbon dioxide on the site, for the activities listed in Annex I to Directive 2003/87/EC. Member States could include information on energy efficiency levels in their reporting under Directive 2010/75/EU.
- (43) Member States should establish, on the basis of objective, transparent and non-discriminatory criteria, rules governing the bearing and sharing of costs of grid connections and grid reinforcements and for technical adaptations needed to integrate new producers of electricity produced from high-efficiency cogeneration, taking into account guidelines and codes developed in accordance with Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity<sup>(1)</sup> and Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks<sup>(2)</sup>. Producers of electricity generated from high-efficiency cogeneration should be allowed to issue a call for tender for the connection work. Access to the grid system for electricity produced from high-efficiency cogeneration, especially for small scale and micro-cogeneration units, should be facilitated. In accordance with Article 3(2) of Directive 2009/72/EC and Article 3(2) of Directive 2009/73/EC, Member States may impose public service obligations, including in relation to energy efficiency, on undertakings operating in the electricity and gas sectors.
- (44) Demand response is an important instrument for improving energy efficiency, since it significantly increases the opportunities for consumers or third parties nominated by them to take action on consumption and billing information and thus provides a mechanism to reduce or shift consumption, resulting in energy savings in both final consumption and, through the more optimal use of networks and generation assets, in energy generation, transmission and distribution.
- (45) Demand response can be based on final customers' responses to price signals or on building automation. Conditions for, and access to, demand response should be improved, including for small final consumers. Taking into account the continuing deployment of smart grids, Member States should therefore ensure that national energy regulatory authorities are able to ensure that network tariffs and regulations incentivise improvements in energy efficiency and support dynamic pricing for demand response measures by final customers. Market integration and equal market entry opportunities for demand-side resources (supply and consumer loads) alongside generation should be pursued. In addition, Member States should ensure that national energy regulatory authorities take an integrated approach encompassing potential savings in the energy supply and the end-use sectors.
- (46) A sufficient number of reliable professionals competent in the field of energy efficiency should be available to ensure the effective and timely implementation of this Directive, for instance as regards compliance with the requirements on energy audits and implementation of energy efficiency obligation schemes. Member States should therefore put in place certification schemes for the providers of energy services, energy audits and other energy efficiency improvement measures.

<sup>(1)</sup> OJ L 211, 14.8.2009, p. 15.

<sup>(2)</sup> OJ L 211, 14.8.2009, p. 36.

- (47) It is necessary to continue developing the market for energy services to ensure the availability of both the demand for and the supply of energy services. Transparency, for example by means of lists of energy services providers, can contribute to this. Model contracts, exchange of best practice and guidelines, in particular for energy performance contracting, can also help stimulate demand. As in other forms of third-party financing arrangements, 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 investment fully or partially carried out by a third party.
- (48) There is a need to identify and remove regulatory and non-regulatory barriers to the use of energy performance contracting and other third-party financing arrangements for energy savings. These barriers include accounting rules and practices that prevent capital investments and annual financial savings resulting from energy efficiency improvement measures from being adequately reflected in the accounts for the whole life of the investment. Obstacles to the renovating of the existing building stock based on a split of incentives between the different actors concerned should also be tackled at national level.
- (49) Member States and regions should be encouraged to make full use of the Structural Funds and the Cohesion Fund to trigger investments in energy efficiency improvement measures. Investment in energy efficiency has the potential to contribute to economic growth, employment, innovation and a reduction in fuel poverty in households, and therefore makes a positive contribution to economic, social and territorial cohesion. Potential areas for funding include energy efficiency measures in public buildings and housing, and providing new skills to promote employment in the energy efficiency sector.
- (50) Member States should encourage the use of financing facilities to further the objectives of this Directive. Such financing facilities could include financial contributions and fines from non-fulfilment of certain provisions of this Directive; resources allocated to energy efficiency under Article 10(3) of Directive 2003/87/EC; resources allocated to energy efficiency in the multiannual financial framework, in particular cohesion, structural and rural development funds, and dedicated European financial instruments, such as the European Energy Efficiency Fund.
- (51) Financing facilities could be based, where applicable, on resources allocated to energy efficiency from Union project bonds; resources allocated to energy efficiency from the European Investment Bank and other European financial institutions, in particular the European Bank for Reconstruction and Development and the Council of Europe Development Bank; resources leveraged in financial institutions; national resources, including through the creation of regulatory and fiscal frameworks encouraging the implementation of energy efficiency initiatives and programmes; revenues from annual emission allocations under Decision No 406/2009/EC.
- (52) The financing facilities could in particular use those contributions, resources and revenues to enable and encourage private capital investment, in particular drawing on institutional investors, while using criteria ensuring the achievement of both environmental and social objectives for the granting of funds; make use of innovative financing mechanisms (e.g. loan guarantees for private capital, loan guarantees to foster energy performance contracting, grants, subsidised loans and dedicated credit lines, third party financing systems) that reduce the risks of energy efficiency projects and allow for cost-effective renovations even among low and medium revenue households; be linked to programmes or agencies which will aggregate and assess the quality of energy saving projects, provide technical assistance, promote the energy services market and help to generate consumer demand for energy services.
- (53) The financing facilities could also provide appropriate resources to support training and certification programmes which improve and accredit skills for energy efficiency; provide resources for research on and demonstration and acceleration of uptake of small-scale and micro- technologies to generate energy and the optimisation of the connections of those generators to the grid; be linked to programmes undertaking action to promote energy efficiency in all dwellings to prevent energy poverty and stimulate landlords letting dwellings to render their property as energy-efficient as possible; provide appropriate resources to support social dialogue and standard-setting aiming at improving energy efficiency and ensuring good working conditions and health and safety at work.
- (54) Available Union financial instruments and innovative financing mechanisms should be used to give practical effect to the objective of improving the energy performance of public bodies' buildings. In that respect, Member States may use their revenues from annual emission allocations under Decision No 406/2009/EC in the development of such mechanisms on a voluntary basis and taking into account national budgetary rules.

- (55) In the implementation of the 20 % energy efficiency target, the Commission will have to monitor the impact of new measures on Directive 2003/87/EC establishing the Union's emissions trading scheme (ETS) in order to maintain the incentives in the emissions trading system rewarding low carbon investments and preparing the ETS sectors for the innovations needed in the future. It will need to monitor the impact on those industry sectors which are exposed to a significant risk of carbon leakage as determined in Commission Decision 2010/2/EU of 24 December 2009 determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage<sup>(1)</sup>, in order to ensure that this Directive promotes and does not impede the development of these sectors.
- (56) 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 deploying energy services and other energy efficiency improvement measures. That Directive states that the second Energy Efficiency Plan adopted by the Member States shall be followed, as appropriate and where necessary, by Commission proposals for additional measures, including extending the period of application of targets. If a report concludes that insufficient progress has been made towards achieving the indicative national targets laid down by that Directive, these proposals are to address the level and nature of the targets. The impact assessment accompanying this Directive finds that the Member States are on track to achieve the 9 % target, which is substantially less ambitious than the subsequently adopted 20 % energy saving target for 2020, and therefore there is no need to address the level of the targets.
- (57) The Intelligent Energy Europe Programme established by Decision No 1639/2006/EC of the European Parliament and of the Council of 24 October 2006 establishing a Competitiveness and Innovation Framework Programme (2007 to 2013)<sup>(2)</sup> has been instrumental in creating an enabling environment for the proper implementation of the Union's sustainable energy policies, by removing market barriers such as insufficient awareness and capacity of market actors and institutions, national technical or administrative barriers to the proper functioning of the internal energy market or underdeveloped labour markets to match the low-carbon economy challenge. Many of those barriers are still relevant.
- (58) In order to tap the considerable energy-saving potential of energy-related products, the implementation of Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a framework for the setting of ecodesign requirements for energy-related products<sup>(3)</sup> and Directive 2010/30/EU of the European Parliament and of the Council 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<sup>(4)</sup> should be accelerated and widened. Priority should be given to products offering the highest energy-saving potential as identified by the Ecodesign Working Plan and the revision, where appropriate, of existing measures.
- (59) In order to clarify the conditions under which Member States can set energy performance requirements under Directive 2010/31/EU whilst respecting Directive 2009/125/EC and its implementing measures, Directive 2009/125/EC should be amended accordingly.
- (60) Since the objective of this Directive, namely to achieve the Union's energy efficiency target of 20 % by 2020 and pave the way towards further energy efficiency improvements beyond 2020, cannot be sufficiently achieved by the Member States without taking additional energy efficiency measures, and can 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.
- (61) In order to permit adaptation 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 the review of the harmonised efficiency reference values laid down on the basis of Directive 2004/8/EC and in respect of the values, calculation methods, default primary energy coefficient and requirements in the Annexes to this Directive. 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 the Council.
- (62) In order to ensure uniform conditions for the implementation of this Directive, implementing powers should be conferred on the Commission. Those powers should be exercised in accordance with Regulation (EU) No 182/2011 of the European Parliament and of the Council of 16 February 2011 laying down the rules and general principles concerning mechanisms for control by Member States of the Commission's exercise of implementing powers<sup>(5)</sup>.

(1) OJ L 1, 5.1.2010, p. 10.

(2) OJ L 310, 9.11.2006, p. 15.

(3) OJ L 285, 31.10.2009, p. 10.

(4) OJ L 153, 18.6.2010, p. 1.

(5) OJ L 55, 28.2.2011, p. 13.

- (63) All substantive provisions of Directives 2004/8/EC and 2006/32/EC should be repealed, except Article 4(1) to (4) of, and Annexes I, III and IV to Directive 2006/32/EC. Those latter provisions should continue to apply until the deadline for the achievement of the 9 % target. Article 9(1) and (2) of Directive 2010/30/EU, which provides for an obligation for Member States only to endeavour to procure products having the highest energy efficiency class, should be deleted.
- (64) The obligation to transpose this Directive into national law should be limited to those provisions that represent a substantive change as compared with Directives 2004/8/EC and 2006/32/EC. The obligation to transpose the provisions which are unchanged arises under those Directives.
- (65) 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 Directives 2004/8/EC and 2006/32/EC.
- (66) In accordance with the Joint Political Declaration of Member States and the Commission on explanatory documents of 28 September 2011, Member States have undertaken to accompany, in justified cases, the notification of their transposition measures with one or more documents explaining the relationship between the components of a directive and the corresponding parts of national transposition instruments. With regard to this Directive, the legislator considers the transmission of such documents to be justified,

HAVE ADOPTED THIS DIRECTIVE:

#### CHAPTER I

#### SUBJECT MATTER, SCOPE, DEFINITIONS AND ENERGY EFFICIENCY TARGETS

##### Article 1

##### Subject matter and scope

1. This Directive establishes a common framework of measures for the promotion of energy efficiency within the Union in order to ensure the achievement of the Union's 2020 20 % headline target on energy efficiency and to pave the way for further energy efficiency improvements beyond that date.

It lays down rules designed to remove barriers in the energy market and overcome market failures that impede efficiency in the supply and use of energy, and provides for the establishment of indicative 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 shall be compatible with Union law. Where national legislation provides for more stringent measures, the Member State shall notify such legislation to the Commission.

##### Article 2

##### Definitions

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

- (1) 'energy' means all forms of energy products, combustible fuels, heat, renewable energy, electricity, or any other form of energy, as defined in Article 2(d) of Regulation (EC) No 1099/2008 of the European Parliament and of the Council of 22 October 2008 on energy statistics <sup>(1)</sup>;
- (2) 'primary energy consumption' means gross inland consumption, excluding non-energy uses;
- (3) 'final energy consumption' means all energy supplied to industry, transport, households, services and agriculture. It excludes deliveries to the energy transformation sector and the energy industries themselves;
- (4) 'energy efficiency' means the ratio of output of performance, service, goods or energy, to input of energy;
- (5) 'energy savings' means an amount of saved energy determined by measuring and/or estimating consumption before and after implementation of an energy efficiency improvement measure, whilst ensuring normalisation for external conditions that affect energy consumption;
- (6) 'energy efficiency improvement' means an increase in energy efficiency as a result of technological, behavioural and/or economic changes;
- (7) 'energy service' means the physical benefit, utility or good derived from a combination of energy with energy-efficient technology 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 result in verifiable and measurable or estimable energy efficiency improvement or primary energy savings;
- (8) 'public bodies' means 'contracting authorities' as defined in Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts <sup>(2)</sup>;
- (9) 'central government' means all administrative departments whose competence extends over the whole territory of a Member State;

<sup>(1)</sup> OJ L 304, 14.11.2008, p. 1.

<sup>(2)</sup> OJ L 134, 30.4.2004, p. 114.

- (10) 'total useful floor area' means the floor area of a building or part of a building, where energy is used to condition the indoor climate;
- (11) 'energy management system' means a set of interrelated or interacting elements of a plan which sets an energy efficiency objective and a strategy to achieve that objective;
- (12) 'European standard' means a standard adopted by the European Committee for Standardisation, the European Committee for Electrotechnical Standardisation or the European Telecommunications Standards Institute and made available for public use;
- (13) 'international standard' means a standard adopted by the International Standardisation Organisation and made available to the public;
- (14) 'obligated party' means an energy distributor or retail energy sales company that is bound by the national energy efficiency obligation schemes referred to in Article 7;
- (15) 'entrusted party' means a legal entity with delegated power from a government or other public body to develop, manage or operate a financing scheme on behalf of the government or other public body;
- (16) 'participating party' means an enterprise or public body that has committed itself to reaching certain objectives under a voluntary agreement, or is covered by a national regulatory policy instrument;
- (17) 'implementing public authority' means a body governed by public law which is responsible for the carrying out or monitoring of energy or carbon taxation, financial schemes and instruments, fiscal incentives, standards and norms, energy labelling schemes, training or education;
- (18) 'policy measure' means a regulatory, financial, fiscal, voluntary or information provision instrument formally established and implemented in a Member State to create a supportive framework, requirement or incentive for market actors to provide and purchase energy services and to undertake other energy efficiency improvement measures;
- (19) 'individual action' means an action that leads to verifiable, and measurable or estimable, energy efficiency improvements and is undertaken as a result of a policy measure;
- (20) 'energy distributor' means a natural or legal person, including a distribution system operator, responsible for transporting energy with a view to its delivery to final customers or to distribution stations that sell energy to final customers;
- (21) 'distribution system operator' means 'distribution system operator' as defined in Directive 2009/72/EC and Directive 2009/73/EC respectively;
- (22) 'retail energy sales company' means a natural or legal person who sells energy to final customers;
- (23) 'final customer' means a natural or legal person who purchases energy for own end use;
- (24) 'energy service provider' means a natural or legal person who delivers energy services or other energy efficiency improvement measures in a final customer's facility or premises;
- (25) 'energy audit' means a systematic procedure with the purpose of obtaining 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, identifying and quantifying cost-effective energy savings opportunities, and reporting the findings;
- (26) 'small and medium-sized enterprises' or 'SMEs' means enterprises as defined in Title I of the Annex to Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises<sup>(1)</sup>; the category of micro, small and medium-sized enterprises is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million;
- (27) 'energy performance contracting' means a contractual arrangement between the beneficiary and the provider of an energy efficiency improvement measure, verified and monitored during the whole term of the contract, where investments (work, supply or service) in that measure are paid for in relation to a contractually agreed level of energy efficiency improvement or other agreed energy performance criterion, such as financial savings;
- (28) 'smart metering system' or 'intelligent metering system' means an electronic system that can measure energy consumption, providing more information than a conventional meter, and can transmit and receive data using a form of electronic communication;
- (29) 'transmission system operator' means 'transmission system operator' as defined in Directive 2009/72/EC and Directive 2009/73/EC respectively;
- (30) 'cogeneration' means the simultaneous generation in one process of thermal energy and electrical or mechanical energy;
- (31) 'economically justifiable demand' means demand that does not exceed the needs for heating or cooling and which would otherwise be satisfied at market conditions by energy generation processes other than cogeneration;

<sup>(1)</sup> OJ L 124, 20.5.2003, p. 36.

- (32) 'useful heat' means heat produced in a cogeneration process to satisfy economically justifiable demand for heating or cooling;
- (33) 'electricity from cogeneration' means electricity generated in a process linked to the production of useful heat and calculated in accordance with the methodology laid down in Annex I;
- (34) 'high-efficiency cogeneration' means cogeneration meeting the criteria laid down in Annex II;
- (35) 'overall efficiency' means 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;
- (36) 'power-to-heat ratio' means the ratio of electricity from cogeneration to useful heat when operating in full cogeneration mode using operational data of the specific unit;
- (37) 'cogeneration unit' means a unit that is able to operate in cogeneration mode;
- (38) 'small-scale cogeneration unit' means a cogeneration unit with installed capacity below 1 MW<sub>e</sub>;
- (39) 'micro-cogeneration unit' means a cogeneration unit with a maximum capacity below 50 kW<sub>e</sub>;
- (40) 'plot ratio' means the ratio of the building floor area to the land area in a given territory;
- (41) 'efficient district heating and cooling' means a district heating or cooling system using at least 50 % renewable energy, 50 % waste heat, 75 % cogenerated heat or 50 % of a combination of such energy and heat;
- (42) 'efficient heating and cooling' means a heating and cooling option that, compared to a baseline scenario reflecting a business-as-usual situation, measurably reduces the input of primary energy needed to supply one unit of delivered energy within a relevant system boundary in a cost-effective way, as assessed in the cost-benefit analysis referred to in this Directive, taking into account the energy required for extraction, conversion, transport and distribution;
- (43) 'efficient individual heating and cooling' means an individual heating and cooling supply option that, compared to efficient district heating and cooling, measurably reduces the input of non-renewable primary energy needed to supply one unit of delivered energy within a relevant system boundary or requires the same input of non-renewable primary energy but at a lower cost, taking into account the energy required for extraction, conversion, transport and distribution;
- (44) 'substantial refurbishment' means a refurbishment whose cost exceeds 50 % of the investment cost for a new comparable unit;
- (45) 'aggregator' means a demand service provider that combines multiple short-duration consumer loads for sale or auction in organised energy markets.

### Article 3

#### Energy efficiency targets

1. Each Member State shall set an indicative national energy efficiency target, based on either primary or final energy consumption, primary or final energy savings, or energy intensity. Member States shall notify those targets to the Commission in accordance with Article 24(1) and Annex XIV Part 1. When doing so, they shall also express those targets in terms of an absolute level of primary energy consumption and final energy consumption in 2020 and shall explain how, and on the basis of which data, this has been calculated.

When setting those targets, Member States shall take into account:

- (a) that the Union's 2020 energy consumption has to be no more than 1 474 Mtoe of primary energy or no more than 1 078 Mtoe of final energy;
- (b) the measures provided for in this Directive;
- (c) the measures adopted to reach the national energy saving targets adopted pursuant to Article 4(1) of Directive 2006/32/EC; and
- (d) other measures to promote energy efficiency within Member States and at Union level.

When setting those targets, Member States may also take into account national circumstances affecting primary energy consumption, such as:

- (a) remaining cost-effective energy-saving potential;
- (b) GDP evolution and forecast;
- (c) changes of energy imports and exports;
- (d) development of all sources of renewable energies, nuclear energy, carbon capture and storage; and
- (e) early action.

2. By 30 June 2014, the Commission shall assess progress achieved and whether the Union is likely to achieve energy consumption of no more than 1 474 Mtoe of primary energy and/or no more than 1 078 Mtoe of final energy in 2020.

3. In carrying out the review referred to in paragraph 2, the Commission shall:

- (a) sum the national indicative energy efficiency targets reported by Member States;
- (b) assess whether the sum of those targets can be considered a reliable guide to whether the Union as a whole is on track, taking into account the evaluation of the first annual report in accordance with Article 24(1), and the evaluation of the National Energy Efficiency Action Plans in accordance with Article 24(2);
- (c) take into account complementary analysis arising from:
  - (i) an assessment of progress in energy consumption, and in energy consumption in relation to economic activity, at Union level, including progress in the efficiency of energy supply in Member States that have based their national indicative targets on final energy consumption or final energy savings, including progress due to these Member States' compliance with Chapter III of this Directive;
  - (ii) results from modelling exercises in relation to future trends in energy consumption at Union level;
- (d) compare the results under points (a) to (c) with the quantity of energy consumption that would be needed to achieve energy consumption of no more than 1 474 Mtoe of primary energy and/or no more than 1 078 Mtoe of final energy in 2020.

## CHAPTER II

### EFFICIENCY IN ENERGY USE

#### Article 4

#### **Building renovation**

Member States shall establish a long-term strategy for mobilising investment in the renovation of the national stock of

residential and commercial buildings, both public and private. This strategy shall encompass:

- (a) an overview of the national building stock based, as appropriate, on statistical sampling;
- (b) identification of cost-effective approaches to renovations relevant to the building type and climatic zone;
- (c) policies and measures to stimulate cost-effective deep renovations of buildings, including staged deep renovations;
- (d) a forward-looking perspective to guide investment decisions of individuals, the construction industry and financial institutions;
- (e) an evidence-based estimate of expected energy savings and wider benefits.

A first version of the strategy shall be published by 30 April 2014 and updated every three years thereafter and submitted to the Commission as part of the National Energy Efficiency Action Plans.

#### Article 5

#### **Exemplary role of public bodies' buildings**

1. Without prejudice to Article 7 of Directive 2010/31/EU, each Member State shall ensure that, as from 1 January 2014, 3 % of the total floor area of heated and/or cooled buildings owned and occupied by its central government is renovated each year to meet at least the minimum energy performance requirements that it has set in application of Article 4 of Directive 2010/31/EU.

The 3 % rate shall be calculated on the total floor area of buildings with a total useful floor area over 500 m<sup>2</sup> owned and occupied by the central government of the Member State concerned that, on 1 January of each year, do not meet the national minimum energy performance requirements set in application of Article 4 of Directive 2010/31/EU. That threshold shall be lowered to 250 m<sup>2</sup> as of 9 July 2015.

Where a Member State requires that the obligation to renovate each year 3 % of the total floor area extends to floor area owned and occupied by administrative departments at a level below central government, the 3 % rate shall be calculated on the total floor area of buildings with a total useful floor area over 500 m<sup>2</sup> and, as of 9 July 2015, over 250 m<sup>2</sup> owned and occupied by central government and by these administrative departments of the Member State concerned that, on 1 January of each year, do not meet the national minimum energy performance requirements set in application of Article 4 of Directive 2010/31/EU.

When implementing measures for the comprehensive renovation of central government buildings in accordance with the first subparagraph, Member States may choose to consider the building as a whole, including the building envelope, equipment, operation and maintenance.

Member States shall require that central government buildings with the poorest energy performance be a priority for energy efficiency measures, where cost-effective and technically feasible.

2. Member States may decide not to set or apply the requirements referred to in paragraph 1 to the following categories of buildings:

- (a) buildings officially protected as part of a designated environment, or because of their special architectural or historical merit, in so far as compliance with certain minimum energy performance requirements would unacceptably alter their character or appearance;
- (b) buildings owned by the armed forces or central government and serving national defence purposes, apart from single living quarters or office buildings for the armed forces and other staff employed by national defence authorities;
- (c) buildings used as places of worship and for religious activities.

3. If a Member State renovates more than 3 % of the total floor area of central government buildings in a given year, it may count the excess towards the annual renovation rate of any of the three previous or following years.

4. Member States may count towards the annual renovation rate of central government buildings new buildings occupied and owned as replacements for specific central government buildings demolished in any of the two previous years, or buildings that have been sold, demolished or taken out of use in any of the two previous years due to more intensive use of other buildings.

5. For the purposes of paragraph 1, by 31 December 2013, Member States shall establish and make publicly available an inventory of heated and/or cooled central government buildings with a total useful floor area over 500 m<sup>2</sup> and, as of 9 July 2015, over 250 m<sup>2</sup>, excluding buildings exempted on the basis of paragraph 2. The inventory shall contain the following data:

- (a) the floor area in m<sup>2</sup>; and
- (b) the energy performance of each building or relevant energy data.

6. Without prejudice to Article 7 of Directive 2010/31/EU, Member States may opt for an alternative approach to paragraphs 1 to 5 of this Article, whereby they take other cost-

effective measures, including deep renovations and measures for behavioural change of occupants, to achieve, by 2020, an amount of energy savings in eligible buildings owned and occupied by their central government that is at least equivalent to that required in paragraph 1, reported on an annual basis.

For the purpose of the alternative approach, Member States may estimate the energy savings that paragraphs 1 to 4 would generate by using appropriate standard values for the energy consumption of reference central government buildings before and after renovation and according to estimates of the surface of their stock. The categories of reference central government buildings shall be representative of the stock of such buildings.

Member States opting for the alternative approach shall notify to the Commission, by 31 December 2013, the alternative measures that they plan to adopt, showing how they would achieve an equivalent improvement in the energy performance of the buildings within the central government estate.

7. Member States shall encourage public bodies, including at regional and local level, and social housing bodies governed by public law, with due regard for their respective competences and administrative set-up, to:

- (a) adopt an energy efficiency plan, freestanding or as part of a broader climate or environmental plan, containing specific energy saving and efficiency objectives and actions, with a view to following the exemplary role of central government buildings laid down in paragraphs 1, 5 and 6;
- (b) put in place an energy management system, including energy audits, as part of the implementation of their plan;
- (c) use, where appropriate, energy service companies, and energy performance contracting to finance renovations and implement plans to maintain or improve energy efficiency in the long term.

#### Article 6

##### Purchasing by public bodies

1. Member States shall ensure that central governments purchase only products, services and buildings with high energy-efficiency performance, insofar as that is consistent with cost-effectiveness, economical feasibility, wider sustainability, technical suitability, as well as sufficient competition, as referred to in Annex III.

The obligation set out in the first subparagraph shall apply to contracts for the purchase of products, services and buildings by public bodies in so far as such contracts have a value equal to or greater than the thresholds laid down in Article 7 of Directive 2004/18/EC.

2. The obligation referred to in paragraph 1 shall apply to the contracts of the armed forces only to the extent that its application does not cause any conflict with the nature and primary aim of the activities of the armed forces. The obligation shall not apply to contracts for the supply of military equipment as defined by Directive 2009/81/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of procedures for the award of certain works contracts, supply contracts and service contracts by contracting authorities or entities in the fields of defence and security<sup>(1)</sup>.

3. Member States shall encourage public bodies, including at regional and local levels, with due regard to their respective competences and administrative set-up, to follow the exemplary role of their central governments to purchase only products, services and buildings with high energy-efficiency performance. Member States shall encourage public bodies, when tendering service contracts with significant energy content, to assess the possibility of concluding long-term energy performance contracts that provide long-term energy savings.

4. Without prejudice to paragraph 1, when purchasing a product package covered as a whole by a delegated act adopted under Directive 2010/30/EU, Member States may require that the aggregate energy efficiency shall take priority over the energy efficiency of individual products within that package, by purchasing the product package that complies with the criterion of belonging to the highest energy efficiency class.

#### Article 7

##### Energy efficiency obligation schemes

1. Each Member State shall set up an energy efficiency obligation scheme. That scheme shall ensure that energy distributors and/or retail energy sales companies that are designated as obligated parties under paragraph 4 operating in each Member State's territory achieve a cumulative end-use energy savings target by 31 December 2020, without prejudice to paragraph 2.

That target shall be at least equivalent to achieving new savings each year from 1 January 2014 to 31 December 2020 of 1,5 % of the annual energy sales to final customers of all energy distributors or all retail energy sales companies by volume, averaged over the most recent three-year period prior to 1 January 2013. The sales of energy, by volume, used in transport may be partially or fully excluded from this calculation.

Member States shall decide how the calculated quantity of new savings referred to in the second subparagraph is to be phased over the period.

2. Subject to paragraph 3, each Member State may:

- (a) carry out the calculation required by the second subparagraph of paragraph 1 using values of 1 % in 2014 and 2015; 1,25 % in 2016 and 2017; and 1,5 % in 2018, 2019 and 2020;
- (b) exclude from the calculation all or part of the sales, by volume, of energy used in industrial activities listed in Annex I to Directive 2003/87/EC;
- (c) allow energy savings achieved in the energy transformation, distribution and transmission sectors, including efficient district heating and cooling infrastructure, as a result of the implementation of the requirements set out in Article 14(4), point (b) of Article 14(5) and Article 15(1) to (6) and (9) to be counted towards the amount of energy savings required under paragraph 1; and
- (d) count energy savings resulting from individual actions newly implemented since 31 December 2008 that continue to have an impact in 2020 and that can be measured and verified, towards the amount of energy savings referred to in paragraph 1.

3. The application of paragraph 2 shall not lead to a reduction of more than 25 % of the amount of energy savings referred to in paragraph 1. Member States making use of paragraph 2 shall notify that fact to the Commission by 5 June 2014, including the elements listed under paragraph 2 to be applied and a calculation showing their impact on the amount of energy savings referred to in paragraph 1.

4. Without prejudice to the calculation of energy savings for the target in accordance with the second subparagraph of paragraph 1, each Member State shall, for the purposes of the first subparagraph of paragraph 1, designate, on the basis of objective and non-discriminatory criteria, obligated parties amongst energy distributors and/or retail energy sales companies operating in its territory and may include transport fuel distributors or transport fuel retailers operating in its territory. The amount of energy savings to fulfil the obligation shall be achieved by the obligated parties among final customers, designated, as appropriate, by the Member State, independently of the calculation made pursuant to paragraph 1, or, if Member States so decide, through certified savings stemming from other parties as described in point (b) of paragraph 7.

5. Member States shall express the amount of energy savings required of each obligated party in terms of either final or primary energy consumption. The method chosen for expressing the required amount of energy savings shall also be used for calculating the savings claimed by obligated parties. The conversion factors set out in Annex IV shall apply.

<sup>(1)</sup> OJ L 216, 20.8.2009, p. 76.

6. Member States shall ensure that the savings stemming from paragraphs 1, 2 and 9 of this Article and Article 20(6) are calculated in accordance with points (1) and (2) of Annex V. They shall put in place measurement, control and verification systems under which at least a statistically significant proportion and representative sample of the energy efficiency improvement measures put in place by the obligated parties is verified. That measurement, control and verification shall be conducted independently of the obligated parties.

7. Within the energy efficiency obligation scheme, Member States may:

- (a) include requirements with a social aim in the saving obligations they impose, including by requiring a share of energy efficiency measures to be implemented as a priority in households affected by energy poverty or in social housing;
- (b) permit obligated parties to count towards their obligation certified energy savings achieved by energy service providers or other third parties, including when obligated parties promote measures through other State-approved bodies or through public authorities that may or may not involve formal partnerships and may be in combination with other sources of finance. Where Member States so permit, they shall ensure that an approval process is in place which is clear, transparent and open to all market actors, and which aims at minimising the costs of certification;
- (c) allow obligated parties to count savings obtained in a given year as if they had instead been obtained in any of the four previous or three following years.

8. Once a year, Member States shall publish the energy savings achieved by each obligated party, or each sub-category of obligated party, and in total under the scheme.

Member States shall ensure that obligated parties provide on request:

- (a) aggregated statistical information on their final customers (identifying significant changes to previously submitted information); and
- (b) 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 private or commercially sensitive information in compliance with applicable Union law.

Such a request shall be made not more than once a year.

9. As an alternative to setting up an energy efficiency obligation scheme under paragraph 1, Member States may opt to take other policy measures to achieve energy savings among

final customers, provided those policy measures meet the criteria set out in paragraphs 10 and 11. The annual amount of new energy savings achieved through this approach shall be equivalent to the amount of new energy savings required by paragraphs 1, 2 and 3. Provided that equivalence is maintained, Member States may combine obligation schemes with alternative policy measures, including national energy efficiency programmes.

The policy measures referred to in the first subparagraph may include, but are not restricted to, the following policy measures or combinations thereof:

- (a) energy or CO<sub>2</sub> taxes that have the effect of reducing end-use energy consumption;
- (b) financing schemes and instruments or fiscal incentives that lead to the application of energy-efficient technology or techniques and have the effect of reducing end-use energy consumption;
- (c) regulations or voluntary agreements that lead to the application of energy-efficient technology or techniques and have the effect of reducing end-use energy consumption;
- (d) standards and norms that aim at improving the energy efficiency of products and services, including buildings and vehicles, except where these are mandatory and applicable in Member States under Union law;
- (e) energy labelling schemes, with the exception of those that are mandatory and applicable in the Member States under Union law;
- (f) training and education, including energy advisory programmes, that lead to the application of energy-efficient technology or techniques and have the effect of reducing end-use energy consumption.

Member States shall notify to the Commission, by 5 December 2013, the policy measures that they plan to adopt for the purposes of the first subparagraph and Article 20(6), following the framework provided in point 4 of Annex V, and showing how they would achieve the required amount of savings. In the case of the policy measures referred to in the second subparagraph and in Article 20(6), this notification shall demonstrate how the criteria in paragraph 10 are met. In the case of policy measures other than those referred to in the second subparagraph or in Article 20(6), Member States shall explain how an equivalent level of savings, monitoring and verification is achieved. The Commission may make suggestions for modifications in the three months following notification.

10. Without prejudice to paragraph 11, the criteria for the policy measures taken pursuant to the second subparagraph of paragraph 9 and Article 20(6) shall be as follows:

- (a) the policy measures provide for at least two intermediate periods by 31 December 2020 and lead to the achievement of the level of ambition set out in paragraph 1;
- (b) the responsibility of each entrusted party, participating party or implementing public authority, whichever is relevant, is defined;
- (c) the energy savings that are to be achieved are determined in a transparent manner;
- (d) the amount of energy savings required or to be achieved by the policy measure are expressed in either final or primary energy consumption, using the conversion factors set out in Annex IV;
- (e) energy savings are calculated using the methods and principles provided in points (1) and (2) of Annex V;
- (f) energy savings are calculated using the methods and principles provided in point 3 of Annex V;
- (g) an annual report of the energy savings achieved is provided by participating parties unless not feasible and made publicly available;
- (h) monitoring of the results is ensured and appropriate measures are envisaged if the progress is not satisfactory;
- (i) a control system is put in place that also includes independent verification of a statistically significant proportion of the energy efficiency improvement measures; and
- (j) data on the annual trend of energy savings are published annually.

11. Member States shall ensure that the taxes referred to in point (a) of the second subparagraph of paragraph 9 comply with the criteria listed in points (a), (b), (c), (d), (f), (h) and (j) of paragraph 10.

Member States shall ensure that the regulations and voluntary agreements referred to in point (c) of the second subparagraph of paragraph 9 comply with the criteria listed in points (a), (b), (c), (d), (e), (g), (h), (i) and (j) of paragraph 10.

Member States shall ensure that the other policy measures referred to in the second subparagraph of paragraph 9 and the Energy Efficiency National Funds referred to in Article 20(6) comply with the criteria listed in points (a), (b), (c), (d), (e), (h), (i) and (j) of paragraph 10.

12. Member States shall ensure that when the impact of policy measures or individual actions overlaps, no double counting of energy savings is made.

#### Article 8

##### Energy audits and energy management systems

1. Member States shall promote the availability to all final customers of high quality energy audits which are cost-effective and:

- (a) carried out in an independent manner by qualified and/or accredited experts according to qualification criteria; or
- (b) implemented and supervised by independent authorities under national legislation.

The energy audits referred to in the first subparagraph may be carried out by in-house experts or energy auditors provided that the Member State concerned has put in place a scheme to assure and check their quality, including, if appropriate, an annual random selection of at least a statistically significant percentage of all the energy audits they carry out.

For the purpose of guaranteeing the high quality of the energy audits and energy management systems, Member States shall establish transparent and non-discriminatory minimum criteria for energy audits based on Annex VI.

Energy audits shall not include clauses preventing the findings of the audit from being transferred to any qualified/accredited energy service provider, on condition that the customer does not object.

2. Member States shall develop programmes to encourage SMEs to undergo energy audits and the subsequent implementation of the recommendations from these audits.

On the basis of transparent and non-discriminatory criteria and without prejudice to Union State aid law, Member States may set up support schemes for SMEs, including if they have concluded voluntary agreements, to cover costs of an energy audit and of the implementation of highly cost-effective recommendations from the energy audits, if the proposed measures are implemented.

Member States shall bring to the attention of SMEs, including through their respective representative intermediary organisations, concrete examples of how energy management systems could help their businesses. The Commission shall assist Member States by supporting the exchange of best practices in this domain.

3. Member States shall also develop programmes to raise awareness among households about the benefits of such audits through appropriate advice services.

Member States shall encourage training programmes for the qualification of energy auditors in order to facilitate sufficient availability of experts.

4. Member States shall ensure that enterprises that are not SMEs are subject to an energy audit carried out in an independent and cost-effective manner by qualified and/or accredited experts or implemented and supervised by independent authorities under national legislation by 5 December 2015 and at least every four years from the date of the previous energy audit.

5. Energy audits shall be considered as fulfilling the requirements of paragraph 4 when they are carried out in an independent manner, on the basis of minimum criteria based on Annex VI, and implemented under voluntary agreements concluded between organisations of stakeholders and an appointed body and supervised by the Member State concerned, or other bodies to which the competent authorities have delegated the responsibility concerned, or by the Commission.

Access of market participants offering energy services shall be based on transparent and non-discriminatory criteria.

6. Enterprises that are not SMEs and that are implementing an energy or environmental management system - certified by an independent body according to the relevant European or International Standards - shall be exempted from the requirements of paragraph 4, provided that Member States ensure that the management system concerned includes an energy audit on the basis of the minimum criteria based on Annex VI.

7. Energy audits may stand alone or be part of a broader environmental audit. Member States may require that an assessment of the technical and economic feasibility of connection to an existing or planned district heating or cooling network shall be part of the energy audit.

Without prejudice to Union State aid law, Member States may implement incentive and support schemes for the implementation of recommendations from energy audits and similar measures.

#### Article 9

#### Metering

1. Member States shall ensure that, in so far as it is technically possible, financially reasonable and proportionate in relation to the potential energy savings, final customers for electricity, natural gas, district heating, district cooling and domestic hot water are provided with competitively priced individual meters that accurately reflect the final customer's actual energy consumption and that provide information on actual time of use.

Such a competitively priced individual meter shall always be provided when:

- (a) an existing meter is replaced, unless this is technically impossible or not cost-effective in relation to the estimated potential savings in the long term;
- (b) a new connection is made in a new building or a building undergoes major renovations, as set out in Directive 2010/31/EU.

2. Where, and to the extent that, Member States implement intelligent metering systems and roll out smart meters for natural gas and/or electricity in accordance with Directives 2009/72/EC and 2009/73/EC:

- (a) they shall ensure that the metering systems provide to final customers information on actual time of use and that the objectives of energy efficiency and benefits for final customers are fully taken into account when establishing the minimum functionalities of the meters and the obligations imposed on market participants;
- (b) they shall ensure the security of the smart meters and data communication, and the privacy of final customers, in compliance with relevant Union data protection and privacy legislation;
- (c) in the case of electricity and at the request of the final customer, they shall require meter operators to ensure that the meter or meters can account for electricity put into the grid from the final customer's premises;
- (d) they shall ensure that if final customers request it, metering data on their electricity input and off-take is made available to them or to a third party acting on behalf of the final customer in an easily understandable format that they can use to compare deals on a like-for-like basis;
- (e) they shall require that appropriate advice and information be given to customers at the time of installation of smart meters, in particular about their full potential with regard to meter reading management and the monitoring of energy consumption.

3. Where heating and cooling or hot water are supplied to a building from a district heating network or from a central source servicing multiple buildings, a heat or hot water meter shall be installed at the heating exchanger or point of delivery.

In multi-apartment and multi-purpose buildings with a central heating/cooling source or supplied from a district heating network or from a central source serving multiple buildings, individual consumption meters shall also be installed by 31 December 2016 to measure the consumption of heat or cooling or hot water for each unit where technically feasible and cost-efficient. Where the use of individual meters is not technically feasible or not cost-efficient, to measure heating, individual heat cost allocators shall be used for measuring heat consumption at each radiator, unless it is shown by the Member State in question that the installation of such heat cost allocators would not be cost-efficient. In those cases, alternative cost-efficient methods of heat consumption measurement may be considered.

Where multi-apartment buildings are supplied from district heating or cooling, or where own common heating or cooling systems for such buildings are prevalent, Member States may introduce transparent rules on the allocation of the cost of thermal or hot water consumption in such buildings to ensure transparency and accuracy of accounting for individual consumption. Where appropriate, such rules shall include guidelines on the way to allocate costs for heat and/or hot water that is used as follows:

- (a) hot water for domestic needs;
- (b) heat radiated from the building installation and for the purpose of heating the common areas (where staircases and corridors are equipped with radiators);
- (c) for the purpose of heating apartments.

#### Article 10

##### Billing information

1. Where final customers do not have smart meters as referred to in Directives 2009/72/EC and 2009/73/EC, Member States shall ensure, by 31 December 2014, that billing information is accurate and based on actual consumption, in accordance with point 1.1 of Annex VII, for all the sectors covered by this Directive, including energy distributors, distribution system operators and retail energy sales companies, where this is technically possible and economically justified.

This obligation may be fulfilled by a system of regular self-reading by the final customers whereby they communicate readings from their meter to the energy supplier. Only when the final customer has not provided a meter reading for a given billing interval shall billing be based on estimated consumption or a flat rate.

2. Meters installed in accordance with Directives 2009/72/EC and 2009/73/EC shall enable accurate billing information based on actual consumption. Member States shall ensure that final customers have the possibility of easy access to complementary information on historical consumption allowing detailed self-checks.

Complementary information on historical consumption shall include:

- (a) cumulative data for at least the three previous years or the period since the start of the supply contract if this is shorter. The data shall correspond to the intervals for which frequent billing information has been produced; and
- (b) detailed data according to the time of use for any day, week, month and year. These data shall be made available to the final customer via the internet or the meter interface for the period of at least the previous 24 months or the period since the start of the supply contract if this is shorter.

3. Independently of whether smart meters have been installed or not, Member States:

- (a) shall require that, to the extent that information on the energy billing and historical consumption of final customers is available, it be made available, at the request of the final customer, to an energy service provider designated by the final customer;
- (b) shall ensure that final customers are offered the option of electronic billing information and bills and that they receive, on request, a clear and understandable explanation of how their bill was derived, especially where bills are not based on actual consumption;
- (c) shall ensure that appropriate information is made available with the bill to provide final customers with a comprehensive account of current energy costs, in accordance with Annex VII;
- (d) may lay down that, at the request of the final customer, the information contained in these bills shall not be considered to constitute a request for payment. In such cases, Member States shall ensure that suppliers of energy sources offer flexible arrangements for actual payments;
- (e) shall require that information and estimates for energy costs are provided to consumers on demand in a timely manner and in an easily understandable format enabling consumers to compare deals on a like-for-like basis.

#### Article 11

##### Cost of access to metering and billing information

1. Member States shall ensure that final customers receive all their bills and billing information for energy consumption free of charge and that final customers also have access to their consumption data in an appropriate way and free of charge.

2. Notwithstanding paragraph 1, the distribution of costs of billing information for the individual consumption of heating and cooling in multi-apartment and multi-purpose buildings pursuant to Article 9(3) shall be carried out on a non-profit basis. Costs resulting from the assignment of this task to a third party, such as a service provider or the local energy supplier, covering the measuring, allocation and accounting for actual individual consumption in such buildings, may be passed onto the final customers to the extent that such costs are reasonable.

#### Article 12

##### Consumer information and empowering programme

1. Member States shall take appropriate measures to promote and facilitate an efficient use of energy by small energy customers, including domestic customers. These measures may be part of a national strategy.

2. For the purposes of paragraph 1, these measures shall include one or more of the elements listed under point (a) or (b):

- (a) a range of instruments and policies to promote behavioural change which may include:
  - (i) fiscal incentives;
  - (ii) access to finance, grants or subsidies;
  - (iii) information provision;
  - (iv) exemplary projects;
  - (v) workplace activities;
- (b) ways and means to engage consumers and consumer organisations during the possible roll-out of smart meters through communication of:
  - (i) cost-effective and easy-to-achieve changes in energy use;
  - (ii) information on energy efficiency measures.

#### Article 13

##### Penalties

Member States shall lay down the rules on penalties applicable in case of non-compliance with the national provisions adopted pursuant to Articles 7 to 11 and Article 18(3) and shall take the necessary measures to ensure that they are implemented. The penalties provided for shall be effective, proportionate and dissuasive. Member States shall notify those provisions to the Commission by 5 June 2014 and shall notify it without delay of any subsequent amendment affecting them.

#### CHAPTER III

##### EFFICIENCY IN ENERGY SUPPLY

#### Article 14

##### Promotion of efficiency in heating and cooling

1. By 31 December 2015, Member States shall carry out and notify to the Commission a comprehensive assessment of the potential for the application of high-efficiency cogeneration and efficient district heating and cooling, containing the information set out in Annex VIII. If they have already carried out an equivalent assessment, they shall notify it to the Commission.

The comprehensive assessment shall take full account of the analysis of the national potentials for high-efficiency cogeneration carried out under Directive 2004/8/EC.

At the request of the Commission, the assessment shall be updated and notified to the Commission every five years. The Commission shall make any such request at least one year before the due date.

2. Member States shall adopt policies which encourage the due taking into account at local and regional levels of the potential of using efficient heating and cooling systems, in particular those using high-efficiency cogeneration. Account shall be taken of the potential for developing local and regional heat markets.

3. For the purpose of the assessment referred to in paragraph 1, Member States shall carry out a cost-benefit analysis covering their territory based on climate conditions, economic feasibility and technical suitability in accordance with Part 1 of Annex IX. The cost-benefit analysis shall be capable of facilitating the identification of the most resource- and cost-efficient solutions to meeting heating and cooling needs. That cost-benefit analysis may be part of an environmental assessment under Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment <sup>(1)</sup>.

4. Where the assessment referred to in paragraph 1 and the analysis referred to in paragraph 3 identify a potential for the application of high-efficiency cogeneration and/or efficient district heating and cooling whose benefits exceed the costs, Member States shall take adequate measures for efficient district heating and cooling infrastructure to be developed and/or to accommodate the development of high-efficiency cogeneration and the use of heating and cooling from waste heat and renewable energy sources in accordance with paragraphs 1, 5, and 7.

Where the assessment referred to in paragraph 1 and the analysis referred to in paragraph 3 do not identify a potential whose benefits exceed the costs, including the administrative costs of carrying out the cost-benefit analysis referred to in paragraph 5, the Member State concerned may exempt installations from the requirements laid down in that paragraph.

5. Member States shall ensure that a cost-benefit analysis in accordance with Part 2 of Annex IX is carried out when, after 5 June 2014:

- (a) a new thermal electricity generation installation with a total thermal input exceeding 20 MW is planned, in order to assess the cost and benefits of providing for the operation of the installation as a high-efficiency cogeneration installation;

<sup>(1)</sup> OJ L 197, 21.7.2001, p. 30.

- (b) an existing thermal electricity generation installation with a total thermal input exceeding 20 MW is substantially refurbished, in order to assess the cost and benefits of converting it to high-efficiency cogeneration;
- (c) an industrial installation with a total thermal input exceeding 20 MW generating waste heat at a useful temperature level is planned or substantially refurbished, in order to assess the cost and benefits of utilising the waste heat to satisfy economically justified demand, including through cogeneration, and of the connection of that installation to a district heating and cooling network;
- (d) a new district heating and cooling network is planned or in an existing district heating or cooling network a new energy production installation with a total thermal input exceeding 20 MW is planned or an existing such installation is to be substantially refurbished, in order to assess the cost and benefits of utilising the waste heat from nearby industrial installations.

The fitting of equipment to capture carbon dioxide produced by a combustion installation with a view to its being geologically stored as provided for in Directive 2009/31/EC shall not be considered as refurbishment for the purpose of points (b), (c) and (d) of this paragraph.

Member States may require the cost-benefit analysis referred to in points (c) and (d) to be carried out in cooperation with the companies responsible for the operation of the district heating and cooling networks.

6. Member States may exempt from paragraph 5:

- (a) those peak load and back-up electricity generating installations which are planned to operate under 1 500 operating hours per year as a rolling average over a period of five years, based on a verification procedure established by the Member States ensuring that this exemption criterion is met;
- (b) nuclear power installations;
- (c) installations that need to be located close to a geological storage site approved under Directive 2009/31/EC.

Member States may also lay down thresholds, expressed in terms of the amount of available useful waste heat, the demand for heat or the distances between industrial installations and district heating networks, for exempting individual installations from the provisions of points (c) and (d) of paragraph 5.

Member States shall notify exemptions adopted under this paragraph to the Commission by 31 December 2013 and any subsequent changes to them thereafter.

7. Member States shall adopt authorisation criteria as referred to in Article 7 of Directive 2009/72/EC, or equivalent permit criteria, to:

- (a) take into account the outcome of the comprehensive assessment referred to in paragraph 1;
- (b) ensure that the requirements of paragraph 5 are fulfilled; and
- (c) take into account the outcome of cost-benefit analysis referred to in paragraph 5.

8. Member States may exempt individual installations from being required, by the authorisation and permit criteria referred to in paragraph 7, to implement options whose benefits exceed their costs, if there are imperative reasons of law, ownership or finance for so doing. In these cases the Member State concerned shall submit a reasoned notification of its decision to the Commission within three months of the date of taking it.

9. Paragraphs 5, 6, 7 and 8 of this Article shall apply to installations covered by Directive 2010/75/EU without prejudice to the requirements of that Directive.

10. On the basis of the harmonised efficiency reference values referred to in point (f) of Annex II, 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 X. 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. Member States shall notify the Commission of such refusal and its justification. In the event of refusal to recognise a guarantee of origin, the Commission may adopt a decision to compel the refusing party to recognise it, in particular with regard to objective, transparent and non-discriminatory criteria on which such recognition is based.

The Commission shall be empowered to review, by means of delegated acts in accordance with Article 23 of this Directive, the harmonised efficiency reference values laid down in Commission Implementing Decision 2011/877/EU<sup>(1)</sup> on the basis of Directive 2004/8/EC by 31 December 2014.

<sup>(1)</sup> OJ L 343, 23.12.2011, p. 91.

11. 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. Public support to cogeneration and district heating generation and networks shall be subject to State aid rules, where applicable.

#### Article 15

##### Energy transformation, transmission and distribution

1. Member States shall ensure that national energy regulatory authorities pay due regard to energy efficiency in carrying out the regulatory tasks specified in Directives 2009/72/EC and 2009/73/EC regarding their decisions on the operation of the gas and electricity infrastructure.

Member States shall in particular ensure that national energy regulatory authorities, through the development of network tariffs and regulations, within the framework of Directive 2009/72/EC and taking into account the costs and benefits of each measure, provide incentives for grid operators to make available system services to network users permitting them to implement energy efficiency improvement measures in the context of the continuing deployment of smart grids.

Such systems services may be determined by the system operator and shall not adversely impact the security of the system.

For electricity, Member States shall ensure that network regulation and network tariffs fulfil the criteria in Annex XI, taking into account guidelines and codes developed pursuant to Regulation (EC) No 714/2009.

2. Member States shall ensure, by 30 June 2015, that:

- (a) an assessment is undertaken of the energy efficiency potentials of their gas and electricity infrastructure, in particular regarding transmission, distribution, load management and interoperability, and connection to energy generating installations, including access possibilities for micro energy generators;
- (b) concrete measures and investments are identified for the introduction of cost-effective energy efficiency improvements in the network infrastructure, with a 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 are detrimental to the overall efficiency (including energy efficiency) of the generation, transmission, distribution and supply of electricity or those that might hamper participation of demand response, in balancing markets and ancillary services procurement. Member States shall ensure that network operators are incentivised to improve efficiency in infrastructure design and operation, and, within the framework of Directive 2009/72/EC, that tariffs allow suppliers to improve consumer participation in system efficiency, including demand response, depending on national circumstances.

5. Without prejudice to Article 16(2) of Directive 2009/28/EC and taking into account Article 15 of Directive 2009/72/EC and the need to ensure continuity in heat supply, Member States shall ensure that, subject to requirements relating to the maintenance of the reliability and safety of the grid, based on transparent and non-discriminatory criteria set by the competent national authorities, transmission system operators and distribution system operators when they are in charge of dispatching the generating installations in their territory:

- (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 in so far as the secure operation of the national electricity system permits.

Member States shall ensure that rules relating to the ranking of the different access and dispatch priorities granted in their electricity systems are clearly explained in detail and published. When providing priority access or dispatch for high-efficiency cogeneration, Member States may set rankings as between, and within different types of, renewable energy and high-efficiency cogeneration and shall in any case ensure that priority access or dispatch for energy from variable renewable energy sources is not hampered.

In addition to the obligations laid down by the first subparagraph, transmission system operators and distribution system operators shall comply with the requirements set out in Annex XII.

Member States may particularly facilitate the connection to the grid system of electricity produced from high-efficiency cogeneration from small-scale and micro-cogeneration units. Member States shall, where appropriate, take steps to encourage network operators to adopt a simple notification 'install and inform' process for the installation of micro-cogeneration units to simplify and shorten authorisation procedures for individual citizens and installers.

6. Subject to the requirements relating to the maintenance of the reliability and safety of the grid, Member States shall take the appropriate steps to ensure that, where this is technically and economically feasible with the mode of operation of the high-efficiency cogeneration installation, high-efficiency cogeneration operators can offer balancing services and other operational services at the level of transmission system operators or distribution system operators. Transmission system operators and distribution system operators shall ensure that such services are part of a services bidding process which is transparent, non-discriminatory and open to scrutiny.

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

7. 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.

8. Member States shall ensure that national energy regulatory authorities encourage demand side resources, such as demand response, to participate alongside supply in wholesale and retail markets.

Subject to technical constraints inherent in managing networks, Member States shall ensure that transmission system operators and distribution system operators, in meeting requirements for balancing and ancillary services, treat demand response providers, including aggregators, in a non-discriminatory manner, on the basis of their technical capabilities.

Subject to technical constraints inherent in managing networks, Member States shall promote access to and participation of demand response in balancing, reserve and other system services markets, inter alia by requiring national energy regulatory authorities or, where their national regulatory systems so require, transmission system operators and distribution system operators in close cooperation with demand service providers and consumers, to define technical modalities for participation in these markets on the basis of the technical requirements of these markets and the capabilities of demand response. Such specifications shall include the participation of aggregators.

9. When reporting under Directive 2010/75/EU, and without prejudice to Article 9(2) of that Directive, Member States shall consider including information on energy efficiency levels of

installations undertaking the combustion of fuels with total rated thermal input of 50 MW or more in the light of the relevant best available techniques developed in accordance with Directive 2010/75/EU and Directive 2008/1/EC of the European Parliament and of the Council of 15 January 2008 concerning integrated pollution prevention and control<sup>(1)</sup>.

Member States may encourage operators of installations referred to in the first subparagraph to improve their annual average net operational rates.

#### CHAPTER IV

#### HORIZONTAL PROVISIONS

##### Article 16

#### Availability of qualification, accreditation and certification schemes

1. Where a Member State considers that the national level of technical competence, objectivity and reliability is insufficient, it shall ensure that, by 31 December 2014, certification and/or accreditation schemes and/or equivalent qualification schemes, including, where necessary, suitable training programmes, become or are available for providers of energy services, energy audits, energy managers and installers of energy-related building elements as defined in Article 2(9) of Directive 2010/31/EU.

2. Member States shall ensure that the schemes referred to in paragraph 1 provide transparency to consumers, are reliable and contribute to national energy efficiency objectives.

3. Member States shall make publicly available the certification and/or accreditation schemes or equivalent qualification schemes referred to in paragraph 1 and shall cooperate among themselves and with the Commission on comparisons between, and recognition of, the schemes.

Member States shall take appropriate measures to make consumers aware of the availability of qualification and/or certification schemes in accordance with Article 18(1).

##### Article 17

#### Information and training

1. Member States shall ensure that information on available energy efficiency mechanisms and financial and legal frameworks is transparent and widely disseminated to all relevant market actors, such as consumers, builders, architects, engineers, environmental and energy auditors, and installers of building elements as defined in Directive 2010/31/EU.

Member States shall encourage the provision of information to banks and other financial institutions on possibilities of participating, including through the creation of public/private partnerships, in the financing of energy efficiency improvement measures.

<sup>(1)</sup> OJ L 24, 29.1.2008, p. 8.

2. Member States shall establish appropriate conditions for market operators to provide adequate and targeted information and advice to energy consumers on energy efficiency.

3. The Commission shall review the impact of its measures to support the development of platforms, involving, inter alia, the European social dialogue bodies in fostering training programmes for energy efficiency, and shall bring forward further measures if appropriate. The Commission shall encourage European social partners in their discussions on energy efficiency.

4. Member States shall, with the participation of stakeholders, including local and regional authorities, promote suitable information, awareness-raising and training initiatives to inform citizens of the benefits and practicalities of taking energy efficiency improvement measures.

5. The Commission shall encourage the exchange and wide dissemination of information on best energy efficiency practices in Member States.

#### Article 18

##### Energy services

1. Member States shall promote the energy services market and access for SMEs to this market by:

- (a) disseminating clear and easily accessible information on:
  - (i) available energy service contracts and clauses that should be included in such contracts to guarantee energy savings and final customers' rights;
  - (ii) financial instruments, incentives, grants and loans to support energy efficiency service projects;
- (b) encouraging the development of quality labels, inter alia, by trade associations;
- (c) making publicly available and regularly updating a list of available energy service providers who are qualified and/or certified and their qualifications and/or certifications in accordance with Article 16, or providing an interface where energy service providers can provide information;
- (d) supporting the public sector in taking up energy service offers, in particular for building refurbishment, by:
  - (i) providing model contracts for energy performance contracting which include at least the items listed in Annex XIII;
  - (ii) providing information on best practices for energy performance contracting, including, if available, cost-benefit analysis using a life-cycle approach;

(e) providing a qualitative review in the framework of the National Energy Efficiency Action Plan regarding the current and future development of the energy services market.

2. Member States shall support the proper functioning of the energy services market, where appropriate, by:

- (a) identifying and publicising point(s) of contact where final customers can obtain the information referred to in paragraph 1;
  - (b) taking, if necessary, measures to remove the regulatory and non-regulatory barriers that impede the uptake of energy performance contracting and other energy efficiency service models for the identification and/or implementation of energy saving measures;
  - (c) considering putting in place or assigning the role of an independent mechanism, such as an ombudsman, to ensure the efficient handling of complaints and out-of-court settlement of disputes arising from energy service contracts;
  - (d) enabling independent market intermediaries to play a role in stimulating market development on the demand and supply sides.
3. Member States shall ensure that energy distributors, distribution system operators and retail energy sales companies refrain from any activities that may impede the demand for and delivery of energy services or other energy efficiency improvement measures, or hinder the development of markets for such services or measures, including foreclosing the market for competitors or abusing dominant positions.

#### Article 19

##### Other measures to promote energy efficiency

1. Member States shall evaluate and if necessary take appropriate measures to remove regulatory and non-regulatory barriers to energy efficiency, without prejudice to the basic principles of the property and tenancy law of the Member States, in particular 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 these parties 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, including national rules and measures regulating decision-making processes in multi-owner properties;

(b) legal and regulatory provisions, and administrative practices, regarding public purchasing and annual budgeting and accounting, with a view to ensuring that individual public bodies are not deterred from making investments in improving energy efficiency and minimising expected life-cycle costs and from using energy performance contracting and other third-party financing mechanisms on a long-term contractual basis.

Such measures to remove barriers may include providing incentives, repealing or amending legal or regulatory provisions, or adopting guidelines and interpretative communications, or simplifying administrative procedures. The measures may be combined with the provision of education, training and specific information and technical assistance on energy efficiency.

2. The evaluation of barriers and measures referred to in paragraph 1 shall be notified to the Commission in the first National Energy Efficiency Action Plan referred to in Article 24(2). The Commission shall encourage the sharing of national best practices in this regard.

#### Article 20

### Energy Efficiency National Fund, Financing and Technical Support

1. Without prejudice to Articles 107 and 108 of the Treaty on the Functioning of the European Union, Member States shall facilitate the establishment of financing facilities, or use of existing ones, for energy efficiency improvement measures to maximise the benefits of multiple streams of financing.

2. The Commission shall, where appropriate, directly or via the European financial institutions, assist Member States in setting up financing facilities and technical support schemes with the aim of increasing energy efficiency in different sectors.

3. The Commission shall facilitate the exchange of best practice between the competent national or regional authorities or bodies, e.g. through annual meetings of the regulatory bodies, public databases with information on the implementation of measures by Member States, and country comparison.

4. Member States may set up an Energy Efficiency National Fund. The purpose of this fund shall be to support national energy efficiency initiatives.

5. Member States may allow for the obligations set out in Article 5(1) to be fulfilled by annual contributions to the Energy Efficiency National Fund of an amount equal to the investments required to achieve those obligations.

6. Member States may provide that obligated parties can fulfil their obligations set out in Article 7(1) by contributing

annually to the Energy Efficiency National Fund an amount equal to the investments required to achieve those obligations.

7. Member States may use their revenues from annual emission allocations under Decision No 406/2009/EC for the development of innovative financing mechanisms to give practical effect to the objective in Article 5 of improving the energy performance of buildings.

#### Article 21

### Conversion factors

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

#### CHAPTER V

### FINAL PROVISIONS

#### Article 22

### Delegated acts

1. The Commission shall be empowered to adopt delegated acts in accordance with Article 23 to review the harmonised efficiency reference values referred to in the second subparagraph of Article 14(10).

2. The Commission shall be empowered to adopt delegated acts in accordance with Article 23 to adapt to technical progress the values, calculation methods, default primary energy coefficient and requirements in Annexes I, II, III, IV, V, VII, VIII, IX, X and XII.

#### Article 23

### 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 power to adopt delegated acts referred to in Article 22 shall be conferred on the Commission for a period of five years from 4 December 2012.

3. The delegation of power referred to in Article 22 may be revoked at any time by the European Parliament or by the Council. A decision to revoke 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 22 shall enter into force only if no objection has been expressed either by the European Parliament or the Council within a period of two 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 two months at the initiative of the European Parliament or of the Council.

#### Article 24

##### Review and monitoring of implementation

1. By 30 April each year as from 2013, Member States shall report on the progress achieved towards national energy efficiency targets, in accordance with Part 1 of Annex XIV. The report may form part of the National Reform Programmes referred to in Council Recommendation 2010/410/EU of 13 July 2010 on broad guidelines for the economic policies of the Member States and of the Union <sup>(1)</sup>.

2. By 30 April 2014, and every three years thereafter, Member States shall submit National Energy Efficiency Action Plans. The National Energy Efficiency Action Plans shall cover significant energy efficiency improvement measures and expected and/ or achieved energy savings, including those in the supply, transmission and distribution of energy as well as energy end-use, in view of achieving the national energy efficiency targets referred to in Article 3(1). The National Energy Efficiency Action Plans shall be complemented with updated estimates of expected overall primary energy consumption in 2020, as well as estimated levels of primary energy consumption in the sectors indicated in Part 1 of Annex XIV.

The Commission shall, by 31 December 2012, provide a template as guidance for the National Energy Efficiency Action Plans. That template shall be adopted in accordance with the advisory procedure referred to in Article 26(2). The National Energy Efficiency Action Plans shall in any case include the information specified in Annex XIV.

3. The Commission shall evaluate the annual reports and the National Energy Efficiency Action Plans and assess the extent to which Member States have made progress towards the achievement of the 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 and the National Energy Efficiency Action Plans, the Commission may issue recommendations to Member States.

4. The Commission shall monitor the impact of implementing this Directive on Directives 2003/87/EC, 2009/28/EC and 2010/31/EU and Decision No 406/2009/EC, and on industry sectors, in particular those that are exposed to a significant risk of carbon leakage as determined in Decision 2010/2/EU.

5. The Commission shall review the continued need for the possibility of exemptions set out in Article 14(6) for the first time in the assessment of the first National Energy Efficiency Action Plan and every three years thereafter. Where the review shows that any of the criteria for these exemptions can no longer be justified taking into account the availability of heat load and the real operating conditions of the exempted installations, the Commission shall propose appropriate measures.

6. Member States shall submit to the Commission before 30 April each year statistics on national electricity and heat production from high and low efficiency cogeneration, in accordance with the methodology shown in Annex I, in relation to total heat and electricity production. They shall also submit annual statistics on cogeneration heat and electricity capacities and fuels for cogeneration, and on district heating and cooling production and capacities, in relation to total heat and electricity production and capacities. Member States shall submit statistics on primary energy savings achieved by application of cogeneration in accordance with the methodology shown in Annex II.

7. By 30 June 2014 the Commission shall submit the assessment referred to in Article 3(2) to the European Parliament and to the Council, accompanied, if necessary, by proposals for further measures.

8. The Commission shall review the effectiveness of the implementation of Article 6 by 5 December 2015, taking into account the requirements laid down in Directive 2004/18/EC and shall submit a report to the European Parliament and the Council. That report shall be accompanied, if appropriate, by proposals for further measures.

9. By 30 June 2016, the Commission shall submit a report to the European Parliament and the Council on the implementation of Article 7. That report shall be accompanied, if appropriate, by a legislative proposal for one or more of the following purposes:

- (a) to change the final date laid down in Article 7(1);
- (b) to review the requirements laid down in Article 7(1), (2) and (3);
- (c) to establish additional common requirements, in particular as regards the matters referred to in Article 7(7).

<sup>(1)</sup> OJ L 191, 23.7.2010, p. 28.

10. 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 19(1). This assessment shall be followed, if appropriate, by proposals for further measures.

11. The Commission shall make the reports referred to in paragraphs 1 and 2 publicly available.

#### Article 25

##### Online platform

The Commission shall establish an online platform in order to foster the practical implementation of this Directive at national, regional and local levels. That platform shall support the exchange of experiences on practices, benchmarking, networking activities, as well as innovative practices.

#### Article 26

##### Committee procedure

1. The Commission shall be assisted by a committee. That committee shall be a committee within the meaning of Regulation (EU) No 182/2011.

2. Where reference is made to this paragraph, Article 4 of Regulation (EU) No 182/2011 shall apply.

#### Article 27

##### Amendments and repeals

1. Directive 2006/32/EC is repealed from 5 June 2014, except for Article 4(1) to (4) thereof and Annexes I, III and IV thereto, without prejudice to the obligations of the Member States relating to the time-limit for its transposition into national law. Article 4(1) to (4) of, and Annexes I, III and IV to Directive 2006/32/EC shall be repealed with effect from 1 January 2017.

Directive 2004/8/EC is repealed from 5 June 2014, without prejudice to the obligations of the Member States relating to the time-limit for its transposition into national law.

References to Directives 2006/32/EC and 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 XV.

2. Article 9(1) and (2) of Directive 2010/30/EU is deleted from 5 June 2014.

3. Directive 2009/125/EC is amended as follows:

(1) the following recital is inserted:

'(35a) Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings (\*) requires Member States to set energy performance requirements for building elements that form part of the building envelope and system requirements in respect of the overall energy performance, the proper installation, and the appropriate dimensioning, adjustment and control of the technical building systems which are installed in existing buildings. It is consistent with the objectives of this Directive that these requirements may in certain circumstances limit the installation of energy-related products which comply with this Directive and its implementing measures, provided that such requirements do not constitute an unjustifiable market barrier.

(\*) OJ L 153, 18.6.2010, p. 13.;

(2) the following sentence is added to the end of Article 6(1):

'This shall be without prejudice to the energy performance requirements and system requirements set by Member States in accordance with Article 4(1) and Article 8 of Directive 2010/31/EU.'

#### Article 28

##### Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 5 June 2014.

Notwithstanding the first subparagraph, Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with Article 4, the first subparagraph of Article 5(1), Article 5(5), Article 5(6), the last subparagraph of Article 7(9), Article 14(6), Article 19(2), Article 24(1) and Article 24(2) and point (4) of Annex V by the dates specified therein.

They shall forthwith communicate to the Commission the text of those provisions.

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 29***Entry into force**

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

*Article 30***Addressees**

This Directive is addressed to the Member States.

Done at Strasbourg, 25 October 2012.

*For the European Parliament*  
*The President*  
M. SCHULZ

*For the Council*  
*The President*  
A. D. MAVROYIANNIS

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## ANNEX I

## GENERAL PRINCIPLES FOR THE CALCULATION OF ELECTRICITY FROM COGENERATION

## Part I

## General principles

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 outlet of the main generators;
- (i) in cogeneration units of types (b), (d), (e), (f), (g) and (h) referred to in Part II with an annual overall efficiency set by Member States at a level of at least 75 %, and
- (ii) in cogeneration units of types (a) and (c) referred to in Part II 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 point (i) of point (a) (cogeneration units of types (b), (d), (e), (f), (g), and (h) referred to in Part II) or with an annual overall efficiency below the value referred to in point (ii) of point (a) (cogeneration units of types (a) and (c) referred to in Part II) cogeneration is calculated according to the following formula:

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

where:

$E_{\text{CHP}}$  is the amount of electricity from cogeneration;

$C$  is the power-to-heat ratio;

$H_{\text{CHP}}$  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, in particular for statistical purposes, for units of types (a), (b), (c), (d) and (e) referred to in Part II 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 types (f), (g), (h), (i), (j) and (k) referred to in Part II, such default values shall be published and shall be notified to the Commission.

- (c) 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 points (a) and (b).
- (d) Member States may determine the power-to-heat ratio as the ratio of electricity to useful heat when operating in cogeneration mode at a lower capacity using operational data of the specific unit.
- (e) Member States may use other reporting periods than one year for the purpose of the calculations according to points (a) and (b).

**Part II***Cogeneration technologies covered by this Directive*

- (a) Combined cycle gas turbine with heat recovery
- (b) Steam back pressure 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(30).

When implementing and applying the general principles for the calculation of electricity from cogeneration, Member States shall use the detailed Guidelines established by Commission Decision 2008/952/EC of 19 November 2008 establishing detailed guidelines for the implementation and application of Annex II to Directive 2004/8/EC of the European Parliament and of the Council <sup>(1)</sup>.

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<sup>(1)</sup> OJ L 338, 17.12.2008, p. 55.

## ANNEX II

**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 I 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 does not create a right to issue guarantees of origin in accordance with Article 14(10).

Ref E $\eta$  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 indicated below without applying Annex I 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 point (a) of this Annex and, for cogeneration units with an electrical capacity larger than 25 MW, 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 I.

If primary energy savings for a process are calculated using alternative calculation as indicated above the primary energy savings shall be calculated using the formula in point (b) of this Annex replacing: 'CHP  $H\eta$ ' with ' $H\eta$ ' and 'CHP  $E\eta$ ' with ' $E\eta$ ', where:

$H\eta$  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.

$E\eta$  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 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 14(10).

- (d) Member States may use other reporting periods than one year for the purpose of the calculations according to points (b) and (c) 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 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, fuel mix and climate conditions as well as applied cogeneration technologies.

The efficiency reference values for separate production of heat and electricity in accordance with the formula set out in point (b) 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 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.
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## ANNEX III

**ENERGY EFFICIENCY REQUIREMENTS FOR PURCHASING PRODUCTS, SERVICES AND BUILDINGS BY CENTRAL GOVERNMENT**

Central governments that purchase products, services or buildings, insofar as this is consistent with cost-effectiveness, economical feasibility, wider sustainability, technical suitability, as well as sufficient competition, shall:

- (a) where a product is covered by a delegated act adopted under Directive 2010/30/EU or by a related Commission implementing directive, purchase only the products that comply with the criterion of belonging to the highest energy efficiency class possible in the light of the need to ensure sufficient competition;
- (b) where a product not covered under point (a) is covered by an implementing measure under Directive 2009/125/EC adopted after the entry into force of this Directive, purchase only products that comply with energy efficiency benchmarks specified in that implementing measure;
- (c) purchase office equipment products covered by Council Decision 2006/1005/EC of 18 December 2006 concerning conclusion of the Agreement between the Government of the United States of America and the European Community on the coordination of energy-efficiency labelling programmes for office equipment <sup>(1)</sup> that comply with energy efficiency requirements not less demanding than those listed in Annex C to the Agreement attached to that Decision;
- (d) purchase only tyres that comply with the criterion of having the highest fuel energy efficiency class, as defined by Regulation (EC) No 1222/2009 of the European Parliament and of the Council of 25 November 2009 on the labelling of tyres with respect to fuel efficiency and other essential parameters <sup>(2)</sup>. This requirement shall not prevent public bodies from purchasing tyres with the highest wet grip class or external rolling noise class where justified by safety or public health reasons;
- (e) require in their tenders for service contracts that service providers use, for the purposes of providing the services in question, only products that comply with the requirements referred to in points (a) to (d), when providing the services in question. This requirement shall apply only to new products purchased by service providers partially or wholly for the purpose of providing the service in question;
- (f) purchase, or make new rental agreements for, only buildings that comply at least with the minimum energy performance requirements referred to in Article 5(1) unless the purpose of the purchase is:
  - (i) to undertake deep renovation or demolition;
  - (ii) in the case of public bodies, to re-sell the building without using it for public body's own purposes; or
  - (iii) to preserve it as a building officially protected as part of a designated environment, or because of its special architectural or historical merit.

Compliance with these requirements shall be verified by means of the energy performance certificates referred to in Article 11 of Directive 2010/31/EU.

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<sup>(1)</sup> OJ L 381, 28.12.2006, p. 24.

<sup>(2)</sup> OJ L 342, 22.12.2009, p. 46.

## ANNEX IV

ENERGY CONTENT OF SELECTED FUELS FOR END USE – CONVERSION TABLE <sup>(1)</sup>

Energy commodity	kJ (NCV)	kgoe (NCV)	kWh (NCV)
1 kg coke	28 500	0,676	7,917
1 kg hard coal	17 200 — 30 700	0,411 — 0,733	4,778 — 8,528
1 kg brown coal briquettes	20 000	0,478	5,556
1 kg black lignite	10 500 — 21 000	0,251 — 0,502	2,917 — 5,833
1 kg brown coal	5 600 — 10 500	0,134 — 0,251	1,556 — 2,917
1 kg oil shale	8 000 — 9 000	0,191 — 0,215	2,222 — 2,500
1 kg peat	7 800 — 13 800	0,186 — 0,330	2,167 — 3,833
1 kg peat briquettes	16 000 — 16 800	0,382 — 0,401	4,444 — 4,667
1 kg residual fuel oil (heavy oil)	40 000	0,955	11,111
1 kg light fuel oil	42 300	1,010	11,750
1 kg motor spirit (petrol)	44 000	1,051	12,222
1 kg paraffin	40 000	0,955	11,111
1 kg liquefied petroleum gas	46 000	1,099	12,778
1 kg natural gas <sup>(1)</sup>	47 200	1,126	13,10
1 kg liquefied natural gas	45 190	1,079	12,553
1 kg wood (25 % humidity) <sup>(2)</sup>	13 800	0,330	3,833
1 kg pellets/wood bricks	16 800	0,401	4,667
1 kg waste	7 400 — 10 700	0,177 — 0,256	2,056 — 2,972
1 MJ derived heat	1 000	0,024	0,278
1 kWh electrical energy	3 600	0,086	1 <sup>(3)</sup>

Source: Eurostat.

<sup>(1)</sup> 93 % methane.

<sup>(2)</sup> Member States may apply other values depending on the type of wood most used in the respective Member State.

<sup>(3)</sup> Applicable when energy savings are calculated in primary energy terms using a bottom-up approach based on final energy consumption. For savings in kWh electricity Member States may apply a default coefficient of 2,5. Member States may apply a different coefficient provided they can justify it.

<sup>(1)</sup> Member States may apply different conversion factors if these can be justified.

## ANNEX V

**Common methods and principles for calculating the impact of energy efficiency obligations schemes or other policy measures under Article 7(1), (2) and (9) and Article 20(6)**

1. Methods for calculating energy savings for the purposes of Article 7(1) and (2), and points (b), (c), (d), (e) and (f) of the second subparagraph of Article 7(9), and Article 20(6).

Obligated, participating or entrusted parties, or implementing public authorities may use one or more of the following methods for calculating energy savings:

- (a) deemed savings, by reference to the results of previous independently monitored energy improvements in similar installations. The generic approach is termed '*ex-ante*';
  - (b) metered savings, whereby the savings from the installation of a measure, or package of measures, is determined by recording the actual reduction in energy use, taking due account of factors such as additionality, occupancy, production levels and the weather which may affect consumption. The generic approach is termed '*ex-post*';
  - (c) scaled savings, whereby engineering estimates of savings are used. This approach may only be used where establishing robust measured data for a specific installation is difficult or disproportionately expensive, e.g. replacing a compressor or electric motor with a different kWh rating than that for which independent information on savings has been measured, or where they are carried out on the basis of nationally established methodologies and benchmarks by qualified or accredited experts that are independent of the obligated, participating or entrusted parties involved;
  - (d) surveyed savings, where consumers' response to advice, information campaigns, labelling or certification schemes, or smart metering is determined. This approach may only be used for savings resulting from changes in consumer behaviour. It may not be used for savings resulting from the installation of physical measures.
2. In determining the energy saving for an energy efficiency measure for the purposes of Article 7(1) and (2), and points (b), (c), (d), (e) and (f) of the second subparagraph of Article 7(9), and Article 20(6) the following principles shall apply:
    - (a) credit may only be given for savings exceeding the following levels:
      - (i) Union emission performance standards for new passenger cars and new light commercial vehicles following the implementation of Regulation (EC) No 443/2009 of the European Parliament and of the Council of 23 April 2009 setting emission performance standards for new passenger cars as part of the Community's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles <sup>(1)</sup> and Regulation (EU) No 510/2011 of the European Parliament and of the Council of 11 May 2011 setting emission performance standards for new light commercial vehicles as part of the Union's integrated approach to reduce CO<sub>2</sub> emissions from light-duty vehicles <sup>(2)</sup>, respectively;
      - (ii) Union requirements relating to the removal from the market of certain energy related products following the implementation of implementing measures under Directive 2009/125/EC; and
    - (b) to account for climatic variations between regions, Member States may choose to adjust the savings to a standard value or to accord different energy savings in accordance with the temperature variations between regions;

<sup>(1)</sup> OJ L 140, 5.6.2009, p. 1.

<sup>(2)</sup> OJ L 145, 31.5.2011, p. 1.

- (c) the activities of the obligated, participating or entrusted party must be demonstrably material to the achievement of the claimed savings;
  - (d) savings from an individual action may not be claimed by more than one party;
  - (e) calculation of energy savings shall take into account the lifetime of savings. This may be done by counting the savings each individual action will achieve between its implementation date and 31 December 2020. Alternatively, Member States may adopt another method that is estimated to achieve at least the same total quantity of savings. When using other methods, Member States shall ensure that the total amount of energy savings calculated with these other methods does not exceed the amount of energy savings that would have been the result of their calculation when counting the savings each individual action will achieve between its implementation date and 31 December 2020. Member States shall describe in detail in their first National Energy Efficiency Action Plan according to Annex XIV to this Directive, which other methods they have used and which provisions have been made to ensure this binding calculation requirement; and
  - (f) actions by obligated, participating or entrusted parties, either individually or together, which aim to result in lasting transformation of products, equipment, or markets to a higher level of energy efficiency are permitted; and
  - (g) in promoting the uptake of energy efficiency measures, Member States shall ensure that quality standards for products, services and installation of measures are maintained. Where such standards do not exist, Member States shall work with obligated, participating or entrusted parties to introduce them.
3. In determining the energy saving from policy measures applied under point (a) of the second subparagraph of Article 7(9), the following principles shall apply:
- (a) credit shall only be given for energy savings from taxation measures exceeding the minimum levels of taxation applicable to fuels as required in Council Directive 2003/96/EC of 27 October 2003 restructuring the Community framework for the taxation of energy products and electricity <sup>(1)</sup> or in Council Directive 2006/112/EC of 28 November 2006 on the common system of value added tax <sup>(2)</sup>;
  - (b) recent and representative official data on price elasticities shall be used for calculation of the impact; and
  - (c) the energy savings from accompanying taxation policy instruments, including fiscal incentives or payment to a fund, shall be accounted separately.

#### 4. Notification of methodology

Member States shall by 5 December 2013 notify the Commission of their proposed detailed methodology for operation of the energy efficiency obligation schemes and for the purposes of Article 7(9) and Article 20(6). Except in the case of taxes, such notification shall include details of:

- (a) obligated, participating or entrusted parties, or implementing public authorities;
- (b) target sectors;
- (c) the level of the energy saving target or expected savings to be achieved over the whole and intermediate periods;
- (d) the duration of the obligation period and intermediate periods;

<sup>(1)</sup> OJ L 283, 31.10.2003, p. 51.

<sup>(2)</sup> OJ L 347, 11.12.2006, p. 1.

- (e) eligible measure categories;
- (f) calculation methodology, including how additionality and materiality are to be determined and which methodologies and benchmarks are used for engineering estimates;
- (g) lifetimes of measures;
- (h) approach taken to address climatic variations within the Member State;
- (i) quality standards;
- (j) monitoring and verification protocols and how the independence of these from the obligated, participating or entrusted parties is ensured;
- (k) audit protocols; and
- (l) how the need to fulfil the requirement in the second subparagraph of Article 7(1) is taken into account.

In the case of taxes, the notification shall include details of:

- (a) target sectors and segment of taxpayers;
  - (b) implementing public authority;
  - (c) expected savings to be achieved;
  - (d) duration of the taxation measure and intermediate periods; and
  - (e) calculation methodology, including which price elasticities are used.
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## ANNEX VI

**Minimum criteria for energy audits including those carried out as part of energy management systems**

The energy audits referred to in Article 8 shall be based on the following guidelines:

- (a) be based on up-to-date, measured, traceable operational data on energy consumption and (for electricity) load profiles;
- (b) comprise a detailed review of the energy consumption profile of buildings or groups of buildings, industrial operations or installations, including transportation;
- (c) build, whenever possible, on life-cycle cost analysis (LCCA) instead of Simple Payback Periods (SPP) in order to take account of long-term savings, residual values of long-term investments and discount rates;
- (d) be proportionate, and sufficiently representative to permit the drawing of a reliable picture of overall energy performance and the reliable identification of the most significant opportunities for improvement.

Energy audits shall allow detailed and validated calculations for the proposed measures so as to provide clear information on potential savings.

The data used in energy audits shall be storable for historical analysis and tracking performance.

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## ANNEX VII

**Minimum requirements for billing and billing information based on actual consumption**

## 1. Minimum requirements for billing

## 1.1. Billing based on actual consumption

In order to enable final customers to regulate their own energy consumption, billing should take place on the basis of actual consumption at least once a year, and billing information should be made available at least quarterly, on request or where the consumers have opted to receive electronic billing or else twice yearly. Gas used only for cooking purposes may be exempted from this requirement.

## 1.2. Minimum information contained in the bill

Member States shall ensure that, where appropriate, the following information is made available to final customers in clear and understandable terms in or with their bills, contracts, transactions, and 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) 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 objective technical specifications for energy-using equipment.

In addition, wherever possible and useful, Member States shall ensure that comparisons with an average normalised or benchmarked final customer in the same user category are made available to final customers in clear and understandable terms, in, with or signposted to within, their bills, contracts, transactions, and receipts at distribution stations.

## 1.3. Advice on energy efficiency accompanying bills and other feedback to final customers

When sending contracts and contract changes, and in the bills customers receive or through websites addressing individual customers, energy distributors, distribution system operators and retail energy sales companies shall inform their customers in a clear and understandable manner of contact information for independent 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.

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## ANNEX VIII

**Potential for efficiency in heating and cooling**

1. The comprehensive assessment of national heating and cooling potentials referred to in Article 14(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, taking into account in particular the evolution of demand in buildings and the different sectors of industry;
  - (c) a map of the national territory, identifying, while preserving commercially sensitive information:
    - (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:
      - electricity generation installations with a total annual electricity production of more than 20 GWh, and
      - waste incineration plants,
      - existing and planned cogeneration installations using technologies referred to in Part II of Annex I, and district heating installations;
  - (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 the refurbishment of existing and the construction of new generation and industrial installations or other facilities generating waste heat;
  - (f) identification of energy efficiency potentials of district heating and cooling infrastructure;
  - (g) strategies, policies and measures that may be adopted up to 2020 and up to 2030 to realise the potential in point (e) in order to meet the demand in point (d), including, where appropriate, proposals to:
    - (i) increase the share of cogeneration in heating and cooling production and in electricity production;
    - (ii) develop efficient 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;
    - (iii) encourage new thermal electricity generation installations and industrial plants producing waste heat to be located in sites where a maximum amount of the available waste heat will be recovered to meet existing or forecasted heat and cooling demand;

- (iv) encourage new residential zones or new industrial plants which consume heat in their production processes to be located where available waste heat, as identified in the comprehensive assessment, can contribute to meeting their heat and cooling demands. This could include proposals that support the clustering of a number of individual installations in the same location with a view to ensuring an optimal matching between demand and supply for heat and cooling;
  - (v) encourage thermal electricity generating installations, industrial plants producing waste heat, waste incineration plants and other waste-to-energy plants to be connected to the local district heating or cooling network;
  - (vi) encourage residential zones and industrial plants which consume heat in their production processes to be connected to the local district heating or cooling network;
- (h) the share of high-efficiency cogeneration and the potential established and progress achieved under Directive 2004/8/EC;
- (i) an estimate of the primary energy to be saved;
- (j) an estimate of public support measures to heating and cooling, if any, with the annual budget and identification of the potential aid element. This does not prejudice a separate notification of the public support schemes for a State aid assessment.
2. To the extent appropriate, the comprehensive assessment may be made up of an assembly of regional or local plans and strategies.
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## ANNEX IX

## COST-BENEFIT ANALYSIS

## Part 1

*General principles of the cost-benefit analysis*

The purpose of preparing cost-benefit analyses in relation to measures for promoting efficiency in heating and cooling as referred to in Article 14(3) is to provide a decision base for qualified prioritisation of limited resources at society level.

The cost-benefit analysis may either cover a project assessment or a group of projects for a broader local, regional or national assessment in order to establish the most cost-effective and beneficial heating or cooling option for a given geographical area for the purpose of heat planning.

Cost-benefit analyses for the purposes of Article 14(3) shall include an economic analysis covering socio-economic and environmental factors.

The cost-benefit analyses shall include the following steps and considerations:

(a) Establishing a system boundary and geographical boundary

The scope of the cost-benefit analyses in question determines the relevant energy system. The geographical boundary shall cover a suitable well-defined geographical area, e.g. a given region or metropolitan area, to avoid selecting sub-optimised solutions on a project by project basis.

(b) Integrated approach to demand and supply options

The cost-benefit analysis shall take into account all relevant supply resources available within the system and geographical boundary, using the data available, including waste heat from electricity generation and industrial installations and renewable energy, and the characteristics of, and trends in heat and cooling demand.

(c) Constructing a baseline

The purpose of the baseline is to serve as a reference point, to which the alternative scenarios are evaluated.

(d) Identifying alternative scenarios

All relevant alternatives to the baseline shall be considered. Scenarios that are not feasible due to technical reasons, financial reasons, national regulation or time constraints may be excluded at an early stage of the cost-benefit analysis if justified based on careful, explicit and well-documented considerations.

Only high-efficiency cogeneration, efficient district heating and cooling or efficient individual heating and cooling supply options should be taken into account in the cost-benefit analysis as alternative scenarios compared to the baseline.

(e) Method for the calculation of cost-benefit surplus

(i) The total long-term costs and benefits of heat or cooling supply options shall be assessed and compared.

(ii) The criterion for evaluation shall be the net present value (NPV) criterion.

(iii) The time horizon shall be chosen such that all relevant costs and benefits of the scenarios are included. For example, for a gas-fired power plant an appropriate time horizon could be 25 years, for a district heating system, 30 years, or for heating equipment such as boilers 20 years.

(f) Calculation and forecast of prices and other assumptions for the economic analysis

(i) Member States shall provide assumptions, for the purpose of the cost-benefit analyses, on the prices of major input and output factors and the discount rate.

- (ii) The discount rate used in the economic analysis for the calculation of net present value shall be chosen according to European or national guidelines <sup>(1)</sup>.
  - (iii) Member States shall use national, European or international energy price development forecasts if appropriate in their national and/or regional/local context.
  - (iv) The prices used in the economic analysis shall reflect the true socio economic costs and benefits and should include external costs, such as environmental and health effects, to the extent possible, i.e. when a market price exists or when it is already included in European or national regulation.
- (g) Economic analysis: Inventory of effects

The economic analyses shall take into account all relevant economic effects.

Member States may assess and take into account in decision making costs and energy savings from the increased flexibility in energy supply and from a more optimal operation of the electricity networks, including avoided costs and savings from reduced infrastructure investment, in the analysed scenarios.

The costs and benefits taken into account shall include at least the following:

(i) Benefits

- Value of output to the consumer (heat and electricity)
- External benefits such as environmental and health benefits, to the extent possible

(ii) Costs

- Capital costs of plants and equipments
- Capital costs of the associated energy networks
- Variable and fixed operating costs
- Energy costs
- Environmental and health cost, to the extent possible

(h) Sensitivity analysis:

A sensitivity analysis shall be included to assess the costs and benefits of a project or group of projects based on different energy prices, discount rates and other variable factors having a significant impact on the outcome of the calculations.

The Member States shall designate the competent authorities responsible for carrying out the cost-benefit analyses under Article 14. Member States may require competent local, regional and national authorities or operators of individual installations to carry out the economic and financial analysis. They shall provide the detailed methodologies and assumptions in accordance with this Annex and establish and make public the procedures for the economic analysis.

## Part 2

### *Principles for the purpose of Article 14(5) and (7)*

The cost-benefit analyses shall provide information for the purpose of the measures in Article 14(5) and (7):

If an electricity-only installation or an installation without heat recovery is planned, a comparison shall be made between the planned installations or the planned refurbishment and an equivalent installation producing the same amount of electricity or process heat, but recovering the waste heat and supplying heat through high-efficiency cogeneration and/or district heating and cooling networks.

Within a given geographical boundary the assessment shall take into account the planned installation and any appropriate existing or potential heat demand points that could be supplied from it, taking into account rational possibilities (for example, technical feasibility and distance).

<sup>(1)</sup> The national discount rate chosen for the purpose of economic analysis should take into account data provided by the European Central Bank.

The system boundary shall be set to include the planned installation and the heat loads, such as building(s) and industrial process. Within this system boundary the total cost of providing heat and power shall be determined for both cases and compared.

Heat loads shall include existing heat loads, such as an industrial installation or an existing district heating system, and also, in urban areas, the heat load and costs that would exist if a group of buildings or part of a city were provided with and/or connected into a new district heating network.

The cost-benefit analysis shall be based on a description of the planned installation and the comparison installation(s), covering electrical and thermal capacity, as applicable, fuel type, planned usage and the number of planned operating hours annually, location and electricity and thermal demand.

For the purpose of the comparison, the thermal energy demand and the types of heating and cooling used by the nearby heat demand points shall be taken into account. The comparison shall cover infrastructure related costs for the planned and comparison installation.

Cost-benefit analyses for the purposes of Article 14(5) shall include an economic analysis covering a financial analysis reflecting actual cash flow transactions from investing in and operating individual installations.

Projects with positive cost-benefit outcome are those where the sum of discounted benefits in the economic and financial analysis exceeds the sum of discounted costs (cost-benefit surplus).

Member States shall set guiding principles for the methodology, assumptions and time horizon for the economic analysis.

Member States may require that the companies responsible for the operation of thermal electric generation installations, industrial companies, district heating and cooling networks, or other parties influenced by the defined system boundary and geographical boundary, contribute data for use in assessing the costs and benefits of an individual installation.

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## ANNEX X

**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 14(10) shall contain at least the following information:
- (i) the identity, location, type and capacity (thermal and electrical) of the installation where the energy was produced;
  - (ii) the dates and places of production;
  - (iii) the lower calorific value of the fuel source from which the electricity was produced;
  - (iv) the quantity and the use of the heat generated together with the electricity;
  - (v) the quantity of electricity from high-efficiency cogeneration in accordance with Annex II that the guarantee represents;
  - (vi) the primary energy savings calculated in accordance with Annex II based on the harmonised efficiency reference values indicated in point (f) of Annex II;
  - (vii) the nominal electric and thermal efficiency of the plant;
  - (viii) whether and to what extent the installation has benefited from investment support;
  - (ix) 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;
  - (x) the date on which the installation became operational; and
  - (xi) the date and country of issue and a unique identification number.

The guarantee of origin shall be of the standard size of 1 MWh. It shall relate to the net electricity output measured at the station boundary and exported to the grid.

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## ANNEX XI

**Energy efficiency criteria for energy network regulation and for electricity network tariffs**

1. Network tariffs shall be cost-reflective of 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 not prevent network operators or energy retailers making available system services 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 energy aggregators;
  - (c) demand reduction from energy efficiency measures undertaken by energy service providers, including energy service companies;
  - (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 or retail tariffs may support dynamic pricing for demand response measures by final customers, such as:
  - (a) time-of-use tariffs;
  - (b) critical peak pricing;
  - (c) real time pricing; and
  - (d) peak time rebates.

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## ANNEX XII

**ENERGY EFFICIENCY REQUIREMENTS FOR TRANSMISSION SYSTEM OPERATORS AND DISTRIBUTION SYSTEM OPERATORS**

Transmission system operators and distribution system 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 comprehensive and necessary 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 overall process to become connected to the grid should be no longer than 24 months, bearing in mind what is reasonably practicable and non-discriminatory;
- (c) provide standardised and simplified procedures for the connection of distributed high-efficiency cogeneration producers to facilitate their connection to the grid.

The standard rules referred to in point (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.

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## ANNEX XIII

**Minimum items to be included in energy performance contracts with the public sector or in the associated tender specifications**

- Clear and transparent list of the efficiency measures to be implemented or the efficiency results to be obtained.
  - Guaranteed savings to be achieved by implementing the measures of the contract.
  - Duration and milestones of the contract, terms and period of notice.
  - Clear and transparent list of the obligations of each contracting party.
  - Reference date(s) to establish achieved savings.
  - Clear and transparent list of steps to be performed to implement a measure or package of measures and, where relevant, associated costs.
  - Obligation to fully implement the measures in the contract and documentation of all changes made during the project.
  - Regulations specifying the inclusion of equivalent requirements in any subcontracting with third parties.
  - Clear and transparent display of financial implications of the project and distribution of the share of both parties in the monetary savings achieved (i.e. remuneration of the service provider).
  - Clear and transparent provisions on measurement and verification of the guaranteed savings achieved, quality checks and guarantees.
  - Provisions clarifying the procedure to deal with changing framework conditions that affect the content and the outcome of the contract (i.e. changing energy prices, use intensity of an installation).
  - Detailed information on the obligations of each of the contracting party and of the penalties for their breach.
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## ANNEX XIV

## GENERAL FRAMEWORK FOR REPORTING

## Part 1

*General framework for annual reports*

The annual reports referred to in Article 24(1) provide a basis for the monitoring of the progress towards national 2020 targets. Member States shall ensure that the reports include the following minimum information:

- (a) an estimate of following indicators in the year before last (year X <sup>(1)</sup> - 2):
- (i) primary energy consumption;
  - (ii) total final energy consumption;
  - (iii) final energy consumption by sector
    - industry
    - transport (split between passenger and freight transport, if available)
    - households
    - services;
  - (iv) gross value added by sector
    - industry
    - services;
  - (v) disposable income of households;
  - (vi) gross domestic product (GDP);
  - (vii) electricity generation from thermal power generation;
  - (viii) electricity generation from combined heat and power;
  - (ix) heat generation from thermal power generation;
  - (x) heat generation from combined heat and power plants, including industrial waste heat;
  - (xi) fuel input for thermal power generation;
  - (xii) passenger kilometres (pkm), if available;
  - (xiii) tonne kilometres (tkm), if available;
  - (xiv) combined transport kilometres (pkm + tkm), in case (xii) and (xiii) are not available;
  - (xv) population.

In sectors where energy consumption remains stable or is growing, Member States shall analyse the reasons for it and attach their appraisal to the estimates.

The second and subsequent reports shall also include points (b) to (e):

- (b) updates on major legislative and non-legislative measures implemented in the previous year which contribute towards the overall national energy efficiency targets for 2020;
- (c) the total building floor area of the buildings with a total useful floor area over 500 m<sup>2</sup> and as of 9 July 2015 over 250 m<sup>2</sup> owned and occupied by the Member States' central government that, on 1 January of the year in which the report is due, did not meet the energy performance requirements referred to in Article 5(1);

<sup>(1)</sup> X = current year.

- (d) the total building floor area of heated and/or cooled buildings owned and occupied by the Member States' central government that was renovated in the previous year referred to in Article 5(1) or the amount of energy savings in eligible buildings owned and occupied by their central government as referred to in Article 5(6);
- (e) energy savings achieved through the national energy efficiency obligation schemes referred to in Article 7(1) or the alternative measures adopted in application of Article 7(9).

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

In the annual reports referred to in Article 24(1) Member States may also include additional national targets. These may be related in particular to the statistical indicators enumerated in point (a) of this Part or combinations thereof, such as primary or final energy intensity or sectoral energy intensities.

## Part 2

### *General framework for National Energy Efficiency Action Plans*

National Energy Efficiency Action Plans referred to in Article 24(2) shall provide a framework for the development of national energy efficiency strategies.

The National Energy Efficiency Action Plans shall cover significant 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 National Energy Efficiency Action Plans include the following minimum information:

#### 1. Targets and strategies

- the indicative 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 specific sectors.

#### 2. Measures and energy savings

The National Energy Efficiency Action Plans 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 National Energy Efficiency Action Plans shall list significant measures and actions taken towards primary energy saving 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 gas 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 National Energy Efficiency Action Plans shall include the results with regard to the fulfilment of the final energy savings target set out in Article 4(1) and (2) of 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 National Energy Efficiency Action Plans shall also include the measurement and/or calculation methodology used for calculating the energy savings. If the 'recommended methodology' <sup>(1)</sup> is applied, the National Energy Efficiency Action Plan should provide references to this.

<sup>(1)</sup> 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 this Directive

3.1. Public bodies (Article 5)

National Energy Efficiency Action Plans shall include the list of public bodies having developed an energy efficiency plan in accordance with Article 5(7).

3.2. Energy efficiency obligations (Article 7)

National Energy Efficiency Action Plans shall include the national coefficients chosen in accordance with Annex IV.

The first National Energy Efficiency Action Plan shall include a short description of the national scheme referred to in Article 7(1) or the alternative measures adopted in application of Article 7(9).

3.3. Energy audits and management systems (Article 8)

National Energy Efficiency Action Plans shall include:

- (a) the number of energy audits carried out in the previous period;
- (b) the number of energy audits carried out in large enterprises in the previous period;
- (c) the number of large companies in their territory, with an indication of the number of those to which Article 8(5) is applicable.

3.4. Promotion of efficient heating and cooling (Article 14)

National Energy Efficiency Action Plans shall include an assessment of the progress achieved in implementing the comprehensive assessment referred to in Article 14(1).

3.5. Energy transmission and distribution (Article 15)

The first National Energy Efficiency Action Plan and the subsequent reports due every 10 years thereafter shall include the assessment made, the measures and investments identified to utilise the energy efficiency potentials of gas and electricity infrastructure referred to in Article 15(2).

3.6. Member States shall report, as part of their National Energy Efficiency Action Plans, on the measures undertaken to enable and develop demand response as referred to in Article 15.

3.7. Availability of qualification, accreditation and certification schemes (Article 16)

National Energy Efficiency Action Plans shall include information on the available qualification, accreditation and certification schemes or equivalent qualification schemes for the providers of energy services, energy audits and energy efficiency improvement measures.

3.8. Energy Services (Article 18)

National Energy Efficiency Action Plans shall include an internet link to the website where the list or the interface of energy services providers referred to in point (c) of Article 18(1) can be accessible.

3.9. Other measures to promote energy efficiency (Article 19)

The first National Energy Efficiency Action Plan shall include a list of the measures referred to in Article 19(1).

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## ANNEX XV

## Correlation table

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