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Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the promotion of the use of energy from renewable sources

Text with EEA relevance

EXPLANATORY MEMORANDUM

1. CONTEXT OF THE PROPOSAL

- **Grounds for and objectives of the proposal**

The Community has long recognised the need to further promote renewable energy given that its exploitation contributes to sustainable development, security of supply and the development of a knowledge based industry creating jobs, economic growth, competitiveness and rural development.

This Proposal for a Directive aims to establish an overall binding target of a 20% share of renewable energy sources in energy consumption and a 10% binding minimum target for biofuels in transport. to be achieved by each Member State, as well as binding national targets by 2020 in line with the overall EU target of 20%.

Responding to the call made by the European Council of March 2006 (Council Document 7775/1/06 REV10) the Commission presented its Strategic European Energy Review on the 10 January 2007. As part of the Review, the Renewable Energy Road Map (COM(2006) 848 final) set out a long term vision for renewable energy sources in the EU. It proposed that the EU establish a binding target of 20% for renewable energy's share of energy consumption in the EU by 2020, and a binding 10% target for the share of renewable energy in transport petrol and diesel.

The European Parliament noted in its Resolution on climate change (14 February 2007) that energy policy is a crucial element of the EU global strategy on climate change, in which renewable energy sources and energy efficient technologies play an important role. The Parliament supported the proposal of a binding target to increase the level of renewable energy in the EU energy mix to 20% by 2020 as a good starting point, and considered that this target should be increased to 25% of the EU energy mix. Furthermore the European Parliament, in its Resolution on the Roadmap for Renewable Energy in Europe (25 September 2007), called on the Commission to present by the end of 2007 a proposal for a renewable energy legislative framework, referring to the importance of setting targets for the shares of renewable energy sources at EU and Member State level.

The Brussels European Council of March 2007 (Council Document 7224/07) reaffirmed the Community's long-term commitment to the EU-wide development of renewable energies beyond 2010 and invited the Commission to submit its proposal for a new comprehensive Directive on the use of renewable resources. This should include legally binding targets for the overall share of renewable energy and the share of biofuels for transport in each Member State.

- **General context**

The EU and the world are at a cross-road concerning the future of energy. The challenges of climate change need to be tackled effectively and urgently. Recent studies have contributed to growing awareness and knowledge of the problem and its long-term consequences, and have stressed the need for decisive and immediate action. An integrated approach to climate and energy policy is needed given that energy production and use are primary sources for greenhouse gas emissions. The European Union's increasing dependence on energy imports

threatens its security of supply and implies higher prices. In contrast, boosting investment in energy efficiency, renewable energy and new technologies has wide-reaching benefits and contributes to the EU's strategy for growth and jobs.

The consequences of climate change, increasing dependence on fossil fuels, and rising energy prices make it even more pressing for the EU to put in place a comprehensive and ambitious policy on energy combining action at the European and Member States' level. In the framework of this energy policy, the renewable energy sector stands out for its ability to reduce greenhouse gas emissions and pollution, exploit local and decentralised energy sources, and stimulate world-class high-tech industries.

Renewable energy sources are largely indigenous, they do not rely on uncertain projections of the future availability of fuels, and their predominantly decentralised nature makes our societies less vulnerable. Consequently they constitute a key element of a sustainable energy future.

For renewables to become the "stepping stone" to reaching the dual objective of increased security of supply and reduced greenhouse gas emissions, a change in the way in which the EU promotes renewables is needed. Strengthening and expansion of the current EU regulatory framework is necessary. It is important to ensure that all Member States take the necessary measures to increase the share of renewables in their energy mix.

A new legislative framework for the promotion and the use of renewable energy in the European Union will provide the business community with the long term stability it needs to make rational investment decisions in the renewable energy sector so as to put the European Union on track towards a cleaner, more secure and more competitive energy future.

- **Existing provisions in the area of the proposal**

Directive 2001/77/EC (OJ L283, 27.10.2007) of the European Parliament and of the Council on the promotion of electricity produced from renewable energy sources in the internal market: the Directive sets a 21% indicative share of electricity produced from renewable energy sources in total Community electricity consumption by 2010. It defines national indicative targets for each Member State, encourages the use of national support schemes, the elimination of administrative barriers and grid system integration, and lays down the obligation to issue renewable energy producers with guarantees of origin if they request them. With current policies and efforts in place, it can be expected that a share of 19% by 2010 –rather than the 21% aimed at - will be reached.

Directive 2003/30/EC (OJ L123, 17.05.2003) of the European Parliament and of the Council on the promotion of the use of biofuels or other renewable fuels for transport: the Directive sets a target of 5.75% of biofuels of all petrol and diesel for transport placed on the market by 31 December 2010. Member States were required to set indicative targets for 2005, taking a reference value of 2% into account. This interim indicative target has not been achieved. Biofuels counted to 1% of fuel transport in 2005. The Commission's conclusion according to the assessment of the progress is that the target for 2010 is not likely to be achieved-expectations are for a share of about 4.2%.

Provisions of the former 2001/77/EC and 2003/30/EC Directives that overlap with the provisions of the new Directive will be deleted at the moment of transposition; those that deal with targets and reporting for 2010 will remain in force until 31 December 2011.

- **Consistency with the other policies and objectives of the Union**

The Proposal is consistent with the EU policies of combating climate change, reducing greenhouse gas emissions, achieving sustainable development and realising the Lisbon Strategy.

The proposal will, in particular, form part of a legislative package that will establish greenhouse gas and renewable energy commitments for all Member States. In addition to the present Directive establishing renewable energy targets for 2020, the package proposed by the Commission includes a Regulation updating national greenhouse gas emissions targets and a Directive to improve and expand the EU emissions trading system (EU ETS). The interlinkages between setting greenhouse gas targets, the emissions trading scheme and renewable energy targets are clear. The Commission sees the various elements as complementary: EU ETS will facilitate growth in renewable energy; the renewable energy Directive will create conditions enabling renewable energy to play a key role in reaching the greenhouse gas targets.

The development of a market for renewable energy sources also has a clear positive impact on security of energy supply, regional and local development opportunities, rural development, export prospects, social cohesion and employment opportunities, especially as concerns small and medium-sized undertakings as well as independent power producers.

2. CONSULTATION OF INTERESTED PARTIES AND IMPACT ASSESSMENT

- **Consultation of interested parties**

Consultation methods, main sectors targeted and general profile of respondents

The main issues addressed in the renewable energy roadmap were debated in the public consultation on the Energy Green Paper and the Strategic European Energy Review between March and September 2006. Furthermore there have been consultations during 2007 including with Member States, citizens, stakeholder groups, civil society organisations, NGOs and consumer organisations.

The legislative proposal is based on a thorough impact assessment process with widespread consultation with stakeholders: numerous meetings with stakeholders on the key issues of the proposal, including barriers to the development of renewable energy uses, biofuels sustainability and flexibility measures in meeting the renewable national targets. Four public consultation exercises (Internet) have taken place, apart from the one on the Energy Green Paper (March - September 2006), on the revision of biofuels policy, on heating and cooling in renewable energy, on administrative barriers and on biofuels sustainability.

1. Public consultation on the biofuels Directive review (April-July 2006);
2. Public consultation on the promotion of heating and cooling from renewable energies (August-October 2006);

3. Public consultation on administrative barriers to the development of renewable resources in the electricity sector (March - April 2007);
4. Public consultation on biofuel issues in the new legislation on the promotion of renewable energy (April-June 2007).

Summary of responses and how they have been taken into account

There was wide support for a stronger policy on renewable energy sources and notably to a longer-term target for renewable energy, with suggestions ranging from 20% in 2020 to 50% and more by 2040/2050. The use of obligatory targets was widely supported, as was the internalisation of external costs.

The main positive effects of an EU initiative to increase heating and cooling from renewable energy sources, as suggested by a large number of respondents, are related to the promotion of local employment and opportunities for small and medium sized enterprises, rural development, stimulating economic growth and increasing global European industry leadership. Tackling climate change and the security of the EU's energy supply were also seen as positive effects. The negative effects suggested by respondents mostly relate to the pressure on biomass resources, which are also used for non-energy industrial use and its further exploitation may lead to shortages or undesirable environmental impacts.

The biofuels issues in the Directive were the subject of the last related public consultation exercise. The proposal submitted to consultation proposed three sustainability criteria: a) land with high carbon stocks should not be converted for biofuel production; b) land with high biodiversity should not be converted for biofuel production; c) biofuels should achieve a minimum level of greenhouse gas savings (carbon stock losses from land use change would not be included in the calculation). In the responses, there is general support for such criteria from most respondents, with many proposing further reinforcements to the scheme.

• **Collection and use of expertise**

Scientific/expertise domains concerned

In order to answer the question whether the EU should adopt quantified targets for the share of renewable energy in 2020 and if so, for what amount and what form, several analyses and studies have been realised including the contribution of external experts.

Methodology used

For the modelling exercise various scenarios using the PRIMES and Green-X models have been carried out for the EU-27.

Main organisations/experts consulted

Several studies have been carried out and used in order to define the different elements of the proposal. These include the FORRES 2020 report: "Analysis of the EU renewable energy sources' evolution up to 2020, April 2005"; the OPTRES report: "Analysis of barriers for the development of electricity generation from renewable energy sources in the EU25", May 2006; the RE-GO project "Renewable Energy Guarantees of Origin: implementation,

interaction and utilization", European Commission Contract No: 4.1030/C/02-025/2002; the E-TRACK project "A European Standard for the tracking of electricity", European Commission Contract No: EIE/04/141/S07.38594; the PROGRESS project "Promotion and growth of renewable energy sources and systems", European Commission Contract No: TREN/D1/42-2005/S07.56988; and the report by MVV Consulting, June 2007: "Heating and cooling from renewable energies: cost of national policies and administrative barriers". Regarding biofuels target impact on food prices, the study carried out by the Zentrum für Europäische Wirtschaftsforschung (ZEW) (2007): "Competitiveness effects of trading emissions and fostering technologies to meet the EU Kyoto targets", 2007.

Means used to make the expert advice publicly available

Most of the studies used have been published or are available on the Europa website, including the OPTRES project with contract No.: EIE/04/073/S07.38567 (www.optres.fhg.de) Progress report, 2007 "Identification of administrative and grid barriers to the promotion of electricity from Renewable Energy Sources" published at: http://ec.europa.eu/energy/res/consultation/admin_barriers_en.htm.

The MVV Consulting report on "Heating and cooling from renewable energies: cost of national policies and administrative barriers" is available at: http://ec.europa.eu/energy/res/sectors/heat_from_res_en.htm.

- **Impact assessment**

The impact assessment explores the associated options, described below:

- In what units should renewable energy targets be expressed? The impact assessment compares options for expressing the targets in terms of primary or final energy consumption and concludes in favour of the latter.
- How should the 20% commitment be shared between Member States? Different methods are assessed, including modelled resource potential in each Member State, applying a flat-rate increase for all Member States, and modulating results by GDP to reflect fairness and cohesion. The conclusion is that a flat-rate approach modulated by GDP is the most appropriate.
- How can cross border transfers in renewables be improved (through the use of guarantees of origin) to help Member States achieve their commitments – including the possibility of renewable energy consumed in one Member State counting towards the targets of another? Options of standardising the guarantees of origin already applied in the electricity sector are examined together with the possible expansion of scope beyond the electricity sector and various degrees of transferability of guarantees of origin. It is suggested that the guarantee of origin regime can be substantially improved and standardised, that its scope could be extended to large scale heating, and that options for trade should be improved.
- What administrative and market barriers to the development of renewable energy can be removed? A range of planning rules, administrative procedures and market information failures are examined and requirements or recommendations to remove them are proposed

(such as creating "one-stop-shops", ensuring charges are proportionate, granting mutual recognition of certification, setting planning deadlines, greater provision of information to public and professionals, and establishing minimum levels of renewable energy consumption in new buildings).

- What criteria and monitoring methods can be used to form a biofuels sustainability regime? A wide range of options are explored, and it is suggested that such a system should include minimum levels of greenhouse gas performance, criteria on biodiversity and type of reward for the use of feedstock diversifying the raw material pool such as lignocellulosic material for the production of second generation biofuels. It is appropriate to leave verification to Member States (whilst encouraging multinational certification schemes); the penalty regime for failing to meet the criteria should be consistent across the single market and include exclusion from tax breaks, the barring of such biofuels from biofuel obligations and national targets. Finally, the actual "tracing" of the biofuels will require physical tracking, so that biofuels fulfilling the sustainability criteria can be identified and rewarded with a premium in the market.

3. LEGAL ELEMENTS OF THE PROPOSAL

- **Summary of the proposed action**

The proposed Directive lays down the principles according to which Member States need to ensure that the share of renewable energy in the EU final energy consumption reaches at least 20% by 2020, and establishes national overall targets for each Member State.

Three sectors are concerned in renewable energy: electricity, heating and cooling and transport. The overall approach is for Member States to retain discretion as to the mix of these sectors in reaching their national target. However, it is proposed that each Member State shall achieve at least a 10% share of renewable energy (primarily biofuels) in the transport sector by 2020. This is done for the following reasons: (1) the transport sector is the sector presenting the most rapid increase in greenhouse gas emissions of all sectors of the economy; (2) biofuels tackle the oil dependence of the transport sector, which is one of the most serious problems of insecurity in energy supply that the EU faces; (3) biofuels are currently more expensive to produce than other forms of renewable energy, which might mean that they would hardly be developed without a specific requirement.

In addition to the targets, the Directive addresses other means to support the development of renewable energy; such as support schemes, administrative procedures, planning, construction and procurement rules, information and training. For electricity from renewable energy sources it tackles grid system issues, such as a guarantee of access to the grid and develops the role of the guarantees of origin. Specifically for biofuels, the Directive sets up a system to guarantee the environmental sustainability of the policy, ensuring *inter alia* that the biofuels counting towards the targets achieve a minimum level of greenhouse gas savings. In 2012, the Commission will be asked to review the extension of this system to other forms of bioenergy.

- **Legal basis**

The Proposal will be made on the basis of Article 175(1) of the Treaty in combination with Article 95. While a single legal base is preferred, it is recognised that a dual legal base is

appropriate where a measure contains provisions based on different parts of the Treaty. Both these legal bases imply the use of the co-decision procedure.

The majority of the proposal falls under Article 175(1) (environment). This Article gives the Community power to act to preserve, protect and improve the quality of the environment, protect human health and make prudent and rational use of natural resources. These objectives are pursued by this Directive. However, the Commission considers that the provisions of harmonised standards for biofuel sustainability fall under Article 95 (internal market).

In general, renewable energy is a close substitute for conventional energy and is supplied through the same infrastructure and logistic systems. All Member States already use renewable energy and all have already decided to increase renewable energy's share. For these reasons, the proposal will not significantly affect Member States' choice between different energy sources or the general structure of their energy supply and does not fall under Article 175(2) of the Treaty.

- **Subsidiarity principle**

The subsidiarity principle applies insofar as the Proposal does not fall under the exclusive competence of the Community.

The objectives of the Proposal cannot be sufficiently achieved by the Member States for the following reasons:

It is clear from the experience with the promotion of renewable energy sources in the European Union that real progress only began to be made when the European Union adopted legislative instruments containing targets to be reached by a given deadline. This is true for Directive 2001/77/EC on the promotion of electricity from renewable energy sources and for Directive 2003/30/EC on the promotion of the use of biofuels. No such legal framework exists to promote the penetration of renewable energy sources in the heating and cooling sector. The development of renewable energy in this sector is nearly stagnant.

The European Council has concluded that the European Union needs to collectively achieve a 20% share of renewable energy sources in final energy consumption by 2020 for reasons of security of supply, of environmental protection and for reasons of competitiveness of the renewable sector, which is currently a world leader in many of the sub-sectors.

Leaving action to the Member States would put the achievement of this share at risk and would not realise an equitable distribution of the efforts needed to arrive at the 20% overall share. In addition, leaving action completely to the Member States would also create investor uncertainty as to the objectives to be reached and the pathway toward these objectives.

In the Proposal, Member States retain wide discretion to favour the development of the renewable energy sector in the way that suits their national potential and circumstances best, including the option of achieving their targets by supporting the development of renewable energy in other Member States.

The Proposal therefore complies with the subsidiarity principle.

- **Proportionality principle and choice of instruments**

The Proposal complies with the proportionality principle for the following reasons:

An overall objective could not be reached without overall commitment, expressed in legally binding targets. As energy policy problems are threatening the Community as a whole, responses should be articulated at the same level.

The instrument chosen is a Directive that has to be implemented by the Member States. A Directive is the appropriate instrument for the promotion of renewable energy sources as it clearly defines the objectives to be reached, while leaving Member States sufficient flexibility to implement the Directive in the way that suits their particular national circumstances best. It goes further than a framework Directive in that it is more precise on objectives and more detailed on measures to be taken.

The Directive sets an overall binding target for the European Union of 20% renewable energy by 2020. In addition, it sets a 10% binding minimum target for the market share of biofuels in 2020 to be observed by all Member States.

For the rest, the Member States are free to develop the renewable energy sector that corresponds best to their national situation and potential, provided they collectively reach the 20% target.

The level of constraint imposed is thus proportionate to the objective aimed at.

A Regulation would not be appropriate as this would have direct effect. Nor would co- or self-regulation be appropriate as there would be insufficient certainty concerning the attainment of important policy objectives.

4. BUDGETARY IMPLICATION

The Proposal has no implication for the Community budget.

5. ADDITIONAL INFORMATION

- **Simplification**

The Proposal provides for simplification of legislation.

Currently there are two Directives in the field of renewable energy: for electricity and biofuels. The third sector, heating and cooling has not been legislated at European level so far. The 2020 target setting and revision of the renewable energy sector offers an opportunity to propose one comprehensive Directive legislating all the three sectors of renewable energies. This makes it possible to put in place indivisible measures in the different sectors, to address cross cutting issues (e.g. support schemes or administrative barriers).

A single Directive and single national action plans will encourage Member States to think of energy policy in a more integrated way concentrating on the best allocation of resources.

Reporting is currently required under both Directives; it will be replaced with a single report under the proposed new Directive.

The Proposal is included in the Commission's Work and Legislative Programme under the reference xxx.

- **Repeal of existing legislation**

The adoption of the Proposal will lead to the repeal of existing legislation.

- **Review/revision/sunset clause**

The Proposal includes several review clauses.

- **Recasting**

The Proposal does not involve recasting.

- **Correlation table**

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

- **European Economic Area (EEA)**

The proposed act concerns an EEA matter and should therefore extend to the European Economic Area.

Proposal for a

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the promotion of the use of energy from renewable sources

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 175(1) thereof and Article 95 thereof in relation to Article 13 of this Directive,

Having regard to the proposal from the Commission¹,

Having regard to the opinion of the European Economic and Social Committee²,

Having regard to the opinion of the Committee of the Regions³,

Acting in accordance with the procedure laid down in Article 251 of the Treaty⁴,

Whereas:

- (1) It is necessary to promote greater use of renewable energy in the Community, with a view to reducing emissions of greenhouse gases; promoting security of energy supply; providing new economic opportunities; and facilitating the integration of renewable energy in the internal market and the operation of the internal market in energy from renewable sources, systems and equipment.
- (2) The increased use of energy from renewable sources constitutes an important part of the package of measures needed to comply with the Kyoto Protocol to the United Nations Framework Convention on Climate Change, and with further European and international greenhouse gas emission reduction commitments beyond 2012.
- (3) The increased use of energy produced from energy from renewable sources contributes to the diversification of energy sources and improves energy security. In particular, increased use of biofuels for transport is one of the most effective tools by which the Community can reduce its dependence on imported oil – where the security of supply problem is most acute - and influence the fuel market for transport.
- (4) The exploitation of renewable sources contributes to the development of a knowledge based industry creating jobs, economic growth, competitiveness, and rural

¹ OJ C [...], [...], p. [...].

² OJ C [...], [...], p. [...].

³ OJ C [...], [...], p. [...].

⁴ OJ C [...], [...], p. [...].

development as well as regional and local development opportunities, export prospects and social cohesion. Beneficial development opportunities are especially high for small and medium-sized undertakings.

- (5) All Member States include energy from renewable sources in their mix of energy sources and all have already made the choice to aim for greater use of energy from renewable sources in future.
- (6) Renewable energy is, in general, a close substitute for conventional energy and is supplied by means of infrastructure and logistical systems that have the same general structure as those used for the supply of conventional energy.
- (7) Directives 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from energy from renewable sources in the internal electricity market⁵ and 2003/30/EC of the European Parliament and of the Council of 8 May 2003 on the promotion of the use of biofuels or other renewable fuels for transport⁶ established settled definitions for different types of renewable energy. In the interests of stability and clarity it is appropriate to use the same definitions in the present Directive.
- (8) The Renewable Energy Roadmap⁷ demonstrated that a 20% target for the overall share of energy from renewable sources and a 10% target for renewable energy in transport would be appropriate and achievable objectives, and that a framework that includes mandatory targets should provide the business community with the long term stability it needs to make rational investment decisions in the renewable energy sector.
- (9) The Brussels European Council of March 2007 reaffirmed the Community's commitment to the EU-wide development of renewable energies beyond 2010. It endorsed a mandatory target of a 20% share of renewable energies in overall EU energy consumption by 2020 and a mandatory 10% minimum target to be achieved by all Member States for the share of biofuels in transport petrol and diesel consumption by 2020. It stated that the binding character of the biofuel target is appropriate subject to production being sustainable, second-generation biofuels becoming commercially available and Directive 98/70 being amended to allow for adequate levels of blending.
- (10) The European Parliament, in its Resolution on the Roadmap for Renewable Energy in Europe⁸, has called on the Commission to present by the end of 2007 a proposal for a renewable energy legislative framework, referring to the importance of setting targets for the shares of energy from renewable sources at EU and Member State level. In its Resolution on heating and cooling from energy from renewable sources⁹ the Parliament called on the Commission to propose an EU target of at least a doubling of the share of renewable heating and cooling by 2020.
- (11) In the light of the positions taken by the Commission, the Council and the European Parliament, it is appropriate to establish mandatory targets for an overall 20% share of

⁵ OJ L 283, 27.10.2001, p. 33. Directive as last amended by Council Directive 2006/108/EC (OJ L 363, 20.12.2006, p. 414).

⁶ OJ L 123, 17.5.2003, p. 42

⁷ COM(2006) 848 final

⁸ P6_TA-PROV(2007)0406, 25 September 2007

⁹ 2005/2122(INI)

renewable energy and a 10% share of renewable energy in transport in the European Union's consumption in 2020, taking into account the fact that if a Member State is prevented from meeting its mandatory target by *force majeure* there will be no obligation.

- (12) Member States' starting points, renewable energy potentials and energy mixes vary. It is therefore necessary to translate the overall 20% target into individual targets for each Member State, with due regard to a fair and adequate allocation taking account of different national starting points and potentials, including the existing level of renewable energies and energy mix. It is appropriate to do this by sharing part the required total increase in the use of energy from renewable sources between Member States on the basis of an equal increase in each Member State's share, and part in proportion to their Gross Domestic Product, with an equal weight being given to each of these factors.
- (13) By contrast, it is appropriate for the 10% target for renewable energy in transport to be set at the same level for each Member State in order to ensure consistency in transport fuel specifications and availability. Because transport fuels are traded easily, Member States with low endowments of the relevant resources will easily be able to obtain renewable transport fuels from elsewhere. While it would technically be possible for the Community to meet its biofuel needs solely from domestic production, it is both likely and desirable that these needs will in fact be met through a combination of domestic production and imports.
- (14) To ensure that the overall targets are achieved, Member States should work towards a series of minimum interim targets and should establish a national action plan including sectoral targets.
- (15) To permit the benefits of technological advance and economies of scale to be reaped, the paths traced by the series of minimum interim targets should take into account the possibility of a more rapid growth in the use of energy from renewable sources in later years.
- (16) The path should take 2005 as its starting point because that is the latest year for which reliable data on national renewable energy shares are available.
- (17) It is necessary to set unambiguous rules for calculating the share of energy from renewable sources.
- (18) In calculating the contribution of hydropower, the effects of climatic variation should be smoothed through the use of a normalisation rule.
- (19) Heat pumps using ambient heat from the ground, water and air, to transfer the thermal energy to a useful temperature level, need electricity to function. To avoid the encouragement of production processes that require the use of significant amounts of conventional energy, only useful thermal energy coming from heat pumps that meet the minimum requirements of the coefficient of performance established in Commission Decision 2007/742/EC¹⁰, in accordance with Regulation (EC) 1980/2000 of the European Parliament and of the Council on a revised Community eco-label

¹⁰ OJ L 301, 20.11.2007, p.14

award scheme¹¹, should be taken into account for the purpose of measuring compliance with the targets established by this Directive.

- (20) Passive energy systems use building design to harness energy. This is considered to be saved energy. Therefore, to avoid double counting, energy harnessed in this way should not be taken into account for the purposes of this Directive.
- (21) Energy from renewable sources produced outside the EU and consumed in the EU should only count towards national or EU targets if this production adds to the quantity of energy from these sources that would have been produced in any event. Because many installations for the production of electricity from renewable energy sources have high capital costs and low production costs, there will be a pronounced tendency – if Member States offer incentives for imports of such electricity from third countries – for these imports to take the form of a mere reassignment of the destination of energy that would always have been produced and does not add to the quantity of production. Rules are therefore needed to ensure that imports of electricity from renewable energy sources are only taken into account for the purposes of this Directive if they represent a net addition to total production of such electricity.
- (22) Heating and cooling can only be transmitted over short distances; it is not therefore necessary to lay down rules for how imports of heating and cooling produced from energy from renewable sources outside the EU should be taken into account for the purposes of this Directive.
- (23) Raw material inputs account for most of the cost of biofuel production; it is therefore reasonable to assume that EU consumption of biofuels produced elsewhere represents a net addition to total production of such fuels; it is not therefore necessary to lay down conditions for how imports of biofuels produced outside the EU might be taken into account for the purposes of this Directive.
- (24) It should not be possible for renewable energy produced and consumed in third countries to count towards the EU's targets for the consumption of renewable energy, since this would reduce the contribution made to the goals of energy security and economic development in the EU.
- (25) To increase the flexibility of the regime for the promotion of energy from renewable sources and to create opportunities for reducing the cost of achieving the targets, it is appropriate to facilitate the consumption in Member States of energy produced from renewable sources in other Member States, and also to enable Member States to count electricity and heat consumed in other Member States but promoted by them towards their own national targets. For this reason, harmonised provisions for the design and transfer of guarantees of origin in these sectors should be adopted.
- (26) The obligatory issuing, on request, of guarantees of origin for heat or cooling produced from energy from renewable sources, should be limited to plants with a capacity of at least 5 MW_{th}, in order to avoid unnecessarily high administrative burdens due, in particular, to the participation of households.

¹¹ OJ L 237, 21.9.2000, p.1.

- (27) To avoid any interference with support schemes granted to existing installations and to avoid overcompensation of renewable energy producers, only guarantees of origin issued to installations that were commissioned after the date of entry into force of this Directive, or for production from an increased renewable energy capacity of an installation after this date, should be considered for this flexibility regime in relation to national targets; it should however remain possible for guarantees of origin issued for such production to be transferred between Member States for the purpose of proving the renewable origin of electricity.
- (28) In order to ensure the development of a vibrant local renewable energy sector, Member States should be able to limit the extent to which renewable energy consumed elsewhere will count towards their national targets. However, they should cease to be able to do this if they fall behind in achieving their targets.
- (29) In order to be able to plan for the orderly development of the local renewable energy sector, and to prevent installations from benefiting from support schemes in more than one Member State and possible windfall profits or overcompensation, Member States should be able to limit the extent to which renewable energy produced domestically will count towards another Member State's national targets.
- (30) Once the system of flexibility through trade in guarantees of origin has been put in motion, the Commission should review whether such safeguards are still needed.
- (31) The lack of transparent rules and coordination between the different authorisation bodies has been shown to hinder the deployment of renewable energy. Therefore the specific structure of the renewable energy sector should be taken into account when national, regional and local authorities review their administrative procedures for giving permission to construct and operate plants producing electricity, heating and cooling or transport fuels from energy from renewable sources. Administrative approval procedures should be streamlined with clear deadlines for installations using energy from renewable sources. Planning rules and guidelines should be adapted to take into consideration cost effective and environmentally beneficial renewable heating and cooling and electricity equipment.
- (32) At national and regional level, rules and obligations for minimum requirements of renewable energy use in new and refurbished buildings have led to considerable increases in renewable energy use. These measures should be encouraged in a wider European context.
- (33) Information and training gaps, especially in the heating and cooling sector, should be removed in order to encourage the deployment of energy from renewable sources
- (34) A harmonised approach is needed to develop training and qualifications and appropriate accreditation for small scale renewable energy equipment installers in order to avoid market distortions and to ensure high quality products and service provision. National accreditation schemes should be mutually recognised by Member States and should therefore be based on minimum harmonised standards, taking into account European technology standards, and existing training and qualification regimes for renewable energy equipment installers. Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of

professional qualifications¹² should continue to apply to installers not covered by this Directive.

- (35) While Directive 2005/36/EC lays down requirements for the mutual recognition of professional qualifications, including for architects, there is a further need to ensure that architects and planners properly consider the use of energy from renewable sources in their plans and designs. Member States should therefore provide clear guidance.
- (36) The costs of connecting new producers of electricity from renewable energy sources to the electricity grid should be objective, transparent and non-discriminatory and due account should be taken of the benefit embedded generators bring to the grid.
- (37) In certain circumstances it is not possible to fully ensure transmission and distribution of electricity produced from energy from renewable sources without affecting the reliability and safety of the grid system; in these circumstances it may be appropriate for financial compensation to be given to those producers.
- (38) Directive 2001/77/EC laid down the framework for the integration in the grid of electricity from renewable energy sources. However, there has been significant variation between Member States in the degree of variation actually achieved. For this reason it is necessary to strengthen the framework and to review its application periodically at national level.
- (39) In order to ensure that biofuel production is sustainable, biofuels used for compliance with the targets laid down in this Directive, and those that benefit from national support systems, should deliver a minimum level of greenhouse gas savings and should not be produced from raw material cultivated on land converted from high-carbon-stock or high-biodiversity uses. If made from raw material produced in the EU, they should comply with EU environmental requirements for agriculture.
- (40) To ensure consumer confidence and ensure that biofuels meeting the environmental sustainability criteria can be sold at a higher price, thus providing an incentive for changes in behaviour, the mass balance system should be used to verify compliance with these criteria.
- (41) It is necessary to lay down clear rules for the calculation of greenhouse gas emissions from biofuels and their fossil fuel comparators.
- (42) The substitution method of accounting for co-products in the calculation of greenhouse gas emissions is appropriate for policy analysis purposes. However, it is not appropriate for regulatory purposes because it depends on a complex and uncertain hypothetical assumption; risks creating perverse incentives; and cannot be applied to fuels produced in refineries. The method of accounting for co-products through economic allocation is not appropriate for regulatory purposes because it makes calculated greenhouse gas savings vary unpredictably over time; this is not conducive to investor confidence. The mass allocation method is not appropriate because it places an exaggerated value on products of limited worth. The energy allocation method is easy to apply; predictable over time; minimises perverse incentives; and gives results

¹² OJ L255, 30.09.2005, p.22

that are generally comparable with the range of results given by the substitution method. It is therefore the most appropriate method to use in assigning greenhouse gas savings to individual consignments of biofuel. For policy analysis purposes the Commission should also, in its reporting, give results using the substitution method.

- (43) In order to avoid a disproportionate administrative burden, a list of default values should be laid down for common biofuel production pathways. Biofuels should always be entitled to claim the level of greenhouse gas savings established by this list. Where the default value for greenhouse gas savings from a production pathway lies below the required minimum level of greenhouse gas savings, producers wishing to demonstrate their compliance with this minimum level should be required to show that actual emissions from their production process are lower than those that were assumed in the calculation of the default values.
- (44) In order to avoid encouraging the cultivation of raw materials in places where this would lead to high greenhouse gas emissions, the use of default values for cultivation should be limited to regions where such an effect can be ruled out.
- (45) The need for sustainability requirements at European level for energy uses of biomass, including forest biomass, outside the transport sector should be reviewed, taking into account the need for biomass resources to be managed in a way that is environmentally sustainable.
- (46) In order to permit the achievement of a 10% share of biofuels, it is necessary to ensure the placing on the market of higher blends of biodiesel in diesel than those envisaged by standard EN590/2004.
- (47) Support measures taken pursuant to this Directive that constitute state aid in the sense of Article 87 of the Treaty have to be notified to and approved by the Commission before their implementation pursuant to Article 88(3) of the Treaty. Information provided to the Commission on the basis of this Directive does not substitute for the obligation of Member States under the notification obligation pursuant to Article 88(3) of the Treaty. Such support measures will be assessed under Articles 86, 87 and 88 Treaty and, in particular, the Community guidelines for State aid for environmental protection¹³ and, if they constitute public service obligations, the Community framework for State aid in the form of public service compensation.¹⁴
- (48) Support measures in the form of investment grants to end consumers, renewable energy obligations, fixed-price payments and premium payments may not constitute state aid in the sense of Article 87 of the Treaty and, in this case, cannot be regulated under the state aid provisions of the Treaty.
- (49) In order to encourage environmental improvement, energy efficiency, innovation and security of energy supply, and to ensure in particular that second-generation biofuels become commercially viable, support schemes that do not constitute State aid in the sense of Article 87 of the Treaty should be differentiated in their support levels so that more energy-efficient renewable energy applications, and those that diversify the

¹³ OJ C 37, 3.2.2001, p. 3.

¹⁴ OJ C 297, 29.11.2005, p. 4.

range of feedstocks used for biofuels, receive higher levels of support to reflect their higher environmental and security of supply benefits.

- (50) National technical specifications and other requirements falling within the scope of Directive 98/34/EC of the European Parliament and of the Council of 22 June 1998 laying down a procedure for the provision of information in the field of technical standards and regulations¹⁵, relating for example to levels of quality, testing methods or conditions of use, should not create barriers for trade in renewable energy equipment and systems. Therefore, support schemes for renewable energy should not prescribe national technical specifications which deviate from existing European standards, or require the supported equipment and systems to be certified or tested in a specified location.
- (51) Regular reporting is needed to ensure a continuing focus on progress in the development of renewable energy at national and Community level.
- (52) Member States operate different mechanisms of support for energy from renewable sources at the national level, which vary also among renewable energy sectors. It remains premature to decide on a harmonised Community-wide framework regarding support schemes in any of the renewable energy sectors.
- (53) The measures necessary for the implementation of this Directive should be adopted in accordance with Council Decision 1999/468/EC of 28 June 1999 laying down the procedures for the exercise of implementing powers conferred on the Commission¹⁶.
- (54) In particular, power should be conferred on the Commission to adapt the methodological principles and values necessary for assessing whether environmental sustainability criteria have been fulfilled in relation to biofuels. Since those measures are of general scope and are designed to amend non-essential elements of this Directive by the adaptation of the methodological principles and values, they must be adopted in line with the regulatory procedure with scrutiny provided for in Article 5a of Council Decision 1999/468/EC.
- (55) Those provisions of Directives 2001/77/CE and 2003/30/CE that overlap with the provisions of this Directive should be deleted from the moment of its transposition; those that deal with targets and reporting for 2010 should remain in force until the end of 2011.
- (56) Since the general objectives of achieving a 20% share of renewable energies in overall EU energy consumption and a 10% share of biofuels in each Member State's transport petrol and diesel consumption by 2020 cannot be sufficiently achieved by the Member States and can therefore, by reason of the scale of the action, be better achieved at Community level, the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. Their detailed implementation should, however, be left to the Member States, thus allowing each Member State to choose the regime which corresponds best to its particular situation. 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 those objectives.

¹⁵ OJ L 204, 21.07.98

¹⁶ OJ L 184, 17.7.1999, p.23 Decision as amended by Decision 2006/512/EC (OJ L 200, 22.7.2006. p.11)

HAVE ADOPTED THIS DIRECTIVE:

Article 1 - Scope

This Directive establishes a common framework for the promotion of energy from renewable sources. It sets mandatory targets for the overall share of energy from renewable sources in energy consumption and for the share of energy from renewable sources in transport. It lays down rules relating to guarantees of origin, administrative procedures, electricity grid connections and support schemes for the use of energy from renewable sources. It sets a binding target for the consumption of renewable energy in transport and establishes environmental sustainability criteria for biofuels.

Article 2 – Definitions

1. For the purposes of this Directive, the definitions in Directive 2003/54/EC of the European Parliament and of the Council shall apply.
2. The following definitions shall also apply:
 - (a) *"energy from renewable sources"* means renewable non-fossil energy sources: wind, solar, geothermal, wave, tidal, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;
 - (b) *"biomass"* means the biodegradable fraction of products, waste and residues from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste;
 - (c) *"final consumption of energy"* means the energy commodities delivered for energy purposes to manufacturing industry, transport, households, services, agriculture, forestry and fisheries, including the consumption of electricity and heat by the energy branch for electricity and heat production and including losses of electricity and heat in distribution;
 - (d) *"district heating or cooling"* means the distribution of thermal energy in the form of steam, hot water or chilled liquids, from a central source of production through a network to multiple buildings, for the use of space or process heating or cooling;
 - (e) *"biofuels"* means liquid or gaseous fuel for transport produced from biomass;
 - (f) *"guarantee of origin"* means an electronic document which has the function of providing proof that a given quantity of energy was produced from renewable sources;
 - (g) *"support scheme"* means a scheme, originating from a market intervention by a Member State, that helps energy from renewable sources to find a market by reducing the cost of production of this energy; increasing the price at which it can be sold; or increasing the volume of it that is bought, by means of a renewable energy obligation or otherwise;

- (h) *"renewable energy obligation"* means a national support scheme requiring energy producers to include a given proportion of energy from renewable sources in their production; requiring energy suppliers to include a given proportion of energy from renewable sources in their supply; or requiring energy consumers to include a given proportion of energy from renewable sources in their consumption;
- (i) *"biodiesel"* means a methyl-ester produced from vegetable or animal oil, of diesel quality, to be used as biofuel;
- (j) *"bioethanol"* means ethanol produced from biomass.

Article 3 – Targets for the use of energy from renewable sources

1. The overall target for the share of energy from renewable sources in each Member State in 2020 shall be as set out in Annex I.
2. Member States shall ensure that:
 - a) their average annual share of energy from renewable sources in final consumption of energy in the compliance period 2011 to 2012 is at least their share of energy from renewable sources in final consumption of energy in 2005 plus [%] of the difference between that share and their overall target for the share of energy from renewable sources in 2020;
 - b) their average annual share of energy from renewable sources in final consumption of energy in the compliance period 2013 to 2014 is at least their share of energy from renewable sources in final consumption of energy in 2005 plus [%] of the difference between that share and their overall target for the share of energy from renewable sources in 2020;
 - c) their average annual share of energy from renewable sources in final consumption of energy in the compliance period 2015 to 2016 is at least their share of energy from renewable sources in final consumption of energy in 2005 plus [%] of the difference between that share and their overall target for the share of energy from renewable sources in 2020;
 - d) their average annual share of energy from renewable sources in final consumption of energy in the compliance period 2017 to 2018 is at least their share of energy from renewable sources in final consumption of energy in 2005 plus [%] of the difference between that share and their overall target for the share of energy from renewable sources in 2020;
 - e) their share of energy from renewable sources in final consumption of energy in 2020 is at least their overall target for the share of energy from renewable sources in that year.
3. Each Member State shall ensure that its share of energy from renewable sources in transport in 2020 is at least 10% of final consumption of energy in transport in that Member State.

4. In calculating total energy consumed in transport for the purposes of paragraph 3, petroleum products other than petrol and diesel shall not be taken into account.

Article 4 – National action plans

1. Each Member State shall adopt a national action plan.

The national action plans shall set out Member States' targets for the shares of energy from renewable sources in transport, electricity and heating and cooling in 2020, and the measures to be taken to achieve these targets, including national policies to develop biomass resources and bring them into use, and the measures to be taken to fulfil the requirements of Articles 10, 11 and 12.

2. The measures set out in the national action plan shall be adequate to ensure that Member States' targets for energy from renewable sources are achieved.
3. Member States shall notify their national action plan to the Commission by 31st March 2010 at the latest.

Article 5 – Calculation of the share of energy from renewable sources

1. The final consumption of energy of energy from renewable sources in each Member State shall be calculated as the sum of:

- a) final electricity consumption from energy from renewable sources;
- b) final consumption of energy from renewable sources for heating and cooling; and
- c) energy from renewable sources consumed in transport.

2. Member States may apply to the Commission for account to be taken, for the purposes of paragraph 1, of the future production of renewable energy plants with very long lead-times that are under construction on their territory but will not be fully operational in 2020 under the following conditions:

- a) construction of the renewable energy plant must have started by 2016;
- b) the renewable energy plant must have a production capacity equal to or in excess of 5000 MW;
- c) it must not be possible to complete construction of the plant by 2020, and possible to complete construction of the plant by 2020; and
- d) the application must be duly substantiated.

The Commission shall decide within 3 months of the application what appropriate adjustment shall be made to the Member State's assumed energy consumption for the year 2020, taking into account the state of advancement of construction, the amount of financial support being provided to the plant, and the quantity of renewable energy to be produced by the plant in an average year when completed.

The Commission shall develop, by 31 December 2012 at the latest and in accordance with the procedure in Article 19(3), rules for the implementation of this provision.

3. Member States may apply to the Commission for account to be taken of *force majeure*. The Commission shall determine whether *force majeure* is demonstrated, in which case it shall allow appropriate adjustment to the Member State's assumed energy consumption for the year 2020.

The Commission shall develop, by 31 December 2012 at the latest and in accordance with the procedure in Article 19(3), rules for the implementation of this provision.

4. For the purposes of paragraph 1(a), final consumption of electricity from renewable sources shall be calculated as the quantity of electricity produced in a Member State from energy from renewable sources, excluding the production of electricity by pumped storage units using water that has previously been pumped uphill, adjusted in accordance with Article 9, paragraph 5.

In multi-fuel plants using renewable and conventional sources, only the part of electricity produced from energy from renewable sources shall be taken into account. For the purposes of this calculation, the contribution of each energy source shall be calculated on the basis of its energy content.

The electricity generated by hydropower shall be accounted for in accordance with the normalisation rule in Annex II.

5. For the purposes of paragraph 1(b), the final consumption of energy from energy from renewable sources for heating and cooling shall be calculated as the consumption of energy from renewable sources delivered to manufacturing industry, transport, households, services, agriculture, forestry and fisheries for heating and cooling purposes, plus the consumption of district heating or cooling of renewable origin, adjusted in accordance with Article 9, paragraph 5.

Thermal energy generated by heat pumps shall only be taken into account for the purposes of paragraph 1(b) if the energy efficiency of the heat pumps meets the minimum requirements of eco-labelling, laid down pursuant to Regulation 1980/2000/EC, in particular the minimum coefficient of performance established in Decision 2007/742/EC, and reviewed in accordance with that Regulation.

Thermal energy generated by passive energy systems, under which lower energy consumption is achieved passively through building design or from heat generated by non-energy from renewable sources, shall not be taken into account for the purposes of paragraph 1(b).

6. For the purposes of paragraph 1(c), biofuels that do not fulfil the environmental sustainability criteria in Article 13 shall not be taken into account.

The energy content of the transport fuels listed in Annex III shall be taken to be as set out in that Annex. Annex III may be adapted to technical and scientific progress according to the procedure referred to in Article 19(2).

Gas, electricity and hydrogen shall only be taken into account, in calculating total energy consumed in transport and in calculating energy from renewable sources consumed in transport, if produced from energy from renewable sources.

7. The share of energy from renewable energy sources shall be calculated as the final consumption of energy from renewable sources divided by the final consumption of energy from all energy sources.
8. The methodology and definitions used in the calculation of the share of energy from renewable sources shall be those of Regulation XXXX/XX.¹⁷
9. Energy from renewable sources produced and consumed in third countries shall not be taken into account for the purposes of measuring compliance with the requirements of this Directive concerning national targets.
10. Electricity produced from renewable sources in third countries and consumed in the Community may only be taken into account for the purposes of measuring compliance with the requirements of this Directive concerning national targets if:
 - a) the third country has adopted a national overall target of a degree of rigour at least equivalent to that of the system of national overall targets laid down in Annex 1;
 - b) the third country complied with the requirements of Article 3(2) in the immediately preceding compliance period, if any; and
 - c) the electricity is issued with a guarantee of origin that forms part of a system of guarantee of origin equivalent to that laid down by this Directive.
11. Electricity produced from renewable sources in the Community and consumed in a third country shall be taken into account for the purposes of measuring the producing Member State's compliance with the requirements of this Directive concerning national targets unless the third country fulfils the criteria laid down in paragraph 8 and the corresponding guarantee of origin has been transferred to the competent body designated by that country.

Article 6 - Guarantees of origin of electricity and heat produced from energy from renewable sources

1. Member States shall ensure that the origin of electricity produced from energy from renewable sources, and of heat or cooling produced from energy from renewable sources in plants with a capacity of at least 5 MW_{th}, can be guaranteed as such within the meaning of this Directive. To that end, Member States shall ensure that a guarantee of origin is issued in response to a request from a producer of renewable energy. No more than one guarantee of origin shall be issued in respect of each MWh of energy produced.
2. Any natural or legal person may hold guarantees of origin.

¹⁷ [Energy Statistics Regulation]

3. Guarantees of origin shall be issued, transferred and cancelled electronically. They shall be accurate, reliable and fraud-resistant. A guarantee of origin shall specify, at least:
 - a) the energy source from which the energy was produced and the starting and ending dates of its production;
 - b) whether the guarantee of origin relates to
 - (i) electricity; or
 - (ii) heat and/or cooling;
 - c) the identity, location, type, capacity and date of commissioning of the installation where the energy was produced;
 - d) the quantity of energy produced, denominated in MWh;
 - e) the date and country of issue and a unique identification number;
 - f) the amount and type of any financial support that has been given for the installation.
4. Member States shall recognise guarantees of origin issued by other Member States in accordance with this Directive. Any refusal by a Member State to recognise a guarantee of origin, in particular for reasons relating to the prevention of fraud, shall be based on objective, transparent and non-discriminatory criteria. In the event of refusal to recognise a guarantee of origin, the Commission may adopt a Decision requiring the Member State in question to recognise it.
5. If a guarantee of origin is issued for energy produced through high efficiency cogeneration using energy from renewable sources, the guarantee of origin shall also comply with the requirements of Article 5 of Directive 2004/8/EC¹⁸.
6. Member States shall ensure that all guarantees of origin to be issued in respect of renewable energy generated in a given calendar year are issued within [three] months of the end of that year.

Article 7– Competent bodies and registers of guarantees of origin

1. Each Member State shall designate a single competent body to undertake the following tasks:
 - a) establish and maintain a national register of guarantees of origin;
 - b) issue guarantees of origin;
 - c) record any transfer of guarantees of origin;

¹⁸ OJ L 52, 21.2.2004

- d) cancel guarantees of origin;
 - e) publish an annual report on the quantities of guarantees of origin issued and those transferred to or from each of the other competent bodies.
2. The competent body shall not carry out any generation and distribution activities.
 3. The national register of guarantees of origin shall record the guarantees of origin held by each person. A guarantee of origin shall only be held in one register at one time.

Article 8 –Transfer of guarantees of origin

1. Guarantees of origin may be transferred between persons within the Community.

Such transfer may accompany the transfer of the energy to which the guarantee of origin relates, or may be separate from any such transfer.
2. The first sub-paragraph of paragraph 1 shall not apply to the transfer between persons in different Member States of guarantees of origin issued in relation to energy from renewable sources produced by installations that were commissioned on or before the date of entry into force of this Directive, unless the production of the energy can be ascribed to an increase in the renewable energy capacity of the installation in question.
3. In exception to paragraph 1, Member States may, in order to safeguard the viability of national support schemes, impose objective, transparent and non-discriminatory terms or limits on the transfer of guarantees of origin to or from other Member States.
4. Member States shall notify the Commission, no later than 30th June each year, of any terms or limits they intend to impose, in accordance with paragraph 3, for the following calendar year. The Commission shall publish this information.
5. In exception to paragraph 3, Member States that did not, in the immediately preceding compliance period, comply with the requirements of Article 3(2) shall not impose terms or limits on the transfer of guarantees of origin from other Member States. These Member States shall ensure that eligibility criteria for support schemes for electricity produced from renewable sources, and for heat or cooling produced from energy from renewable sources in plants with a capacity of at least 10 MW_{th}, do not discriminate on grounds of the geographical location of production within the Community.
6. No later than 31 December 2014, the Commission shall assess whether the exception laid down in paragraph 3 should be maintained and shall submit proposals to the European Parliament and to the Council if appropriate.
7. Member States shall not introduce limits as referred to in paragraph 3 on guarantees of origin from, respectively, any plants or any new capacity added to plants, beyond those in place at the time of, respectively, the first request for issuance of guarantees of origin relating to such plant or the start of operation of the new capacity.

Article 9 – Cancellation of guarantees of origin

1. A guarantee of origin, corresponding to the unit of energy in question, shall be submitted for cancellation to a competent body designated in accordance with Article 7 when:
 - a) the production of electricity from renewable energy sources, or the production of heat or cooling from energy from renewable sources in a plant with a capacity of at least 5 MW_{th}, receives support in the form of fixed-price payments, premium payments, tax reductions or payments resulting from calls for tenders;
 - b) electricity produced from energy from renewable sources, or heat or cooling produced from energy from renewable sources in a plant with a capacity of at least 5 MW_{th}, is taken into account for the purposes of assessing an entity's compliance with a renewable energy obligation; or
 - c) an energy supplier or energy consumer chooses to use a guarantee of origin for the purpose of proving the share or quantity of renewable energy in its energy mix, without claiming the benefits of a support scheme.
2. In the situation referred to in paragraph 1(a), the guarantee of origin shall be submitted to the competent body designated by the Member State that established the system of support.

In the situation referred to in paragraph 1(b) is applied, the guarantee of origin shall be submitted to the competent body designated by the Member State that established the obligation.

In the situation referred to in paragraph 1(c) is applied, the guarantee of origin shall be submitted to the competent body designated by the Member State responsible for the geographical area in which the energy described by the energy mix in question is consumed.
3. Guarantees of origin shall not be submitted to a competent body for cancellation more than 1 year after their date of issue.
4. In exception to paragraph 1(a) and 1(b), Member States which have complied with the requirements of Article 4(2) in the immediately preceding compliance period may request the competent bodies designated in accordance with Article 7, to transfer the guarantees of origin submitted for cancellation under paragraphs 1(a) and 1(b) of this Article to that Member State's account in the register. Member States holding such guarantees of origin may only use them in one of the following two ways:
 - a) to submit them for cancellation to the competent body that they themselves designated according to Article 7; or
 - b) to transfer them to the account that another Member State holds with another competent body; the guarantees of origin shall then immediately be cancelled.

5. When a competent body cancels a guarantee of origin that it did not itself issue, an equivalent quantity of energy from renewable sources shall, for the purposes of measuring compliance with the requirements of this Directive concerning national targets:
 - a) be deducted from the quantity of energy from renewable sources that is taken into account, in relation to the year of production of the energy specified in the guarantee of origin, in measuring compliance by the Member State of the competent body that issued the guarantee of origin; and
 - b) be added to the quantity of energy from renewable sources that is taken into account, in relation to the year of production of the energy specified in the guarantee of origin, in measuring compliance by the Member State of the competent body that cancelled the guarantee of origin.
6. When a competent body cancels a guarantee of origin that it itself issued, there shall be no effect on the measurement of compliance with national targets.
7. When a competent body cancels a guarantee of origin the guarantee of origin shall be made incapable of further transfer.

Article 10 – Administrative procedures

1. Member States shall ensure that any national rules concerning the authorisation, certification and licensing procedures that are applied to plants for the production of electricity, heating or cooling from renewable sources, and to the process of transformation of biomass into biofuels or other energy products, are proportionate and necessary. Member States shall, in particular, ensure that:
 - a) the respective responsibilities of national, regional and local administrative bodies for authorisation, certification and licensing procedures are clearly defined, with precise deadlines for approving planning and building applications;
 - b) administrative procedures are streamlined and expedited at the appropriate administrative level;
 - c) rules governing authorisation, certification and licensing are objective, transparent and non-discriminatory, and take fully into account the particularities of individual renewable energy technologies;
 - d) clear guidelines are established for coordination between administrative bodies, concerning time limits and the receipt and handling of planning and permit applications;
 - e) administrative charges paid by consumers, planners, architects, builders and equipment and system installers and suppliers are transparent and cost-related;
 - f) less burdensome authorisation procedures are established for smaller projects; and

- g) mediators are designated to act in disputes between applicants and authorities responsible for issuing authorisations, certificates and licenses.
2. Member States shall require local and regional administrative bodies to consider the installation of equipment and systems for the use of heating, cooling and electricity from renewable sources and for district heating and cooling when planning, designing, building and refurbishing industrial or residential areas.

In their building regulations and codes Member States shall require the use of minimum levels of energy from renewable sources in all new or refurbished buildings. Any exemption from those minimum levels shall be transparent and based on criteria relating to:

- a) the use of passive, low or zero energy buildings; or
- b) local limitations in the availability of renewable energy resources.

Article 11 – Information and training

1. Member States shall ensure that information on support measures is made available to consumers, builders, installers, architects and suppliers of heating, cooling and electricity equipment and systems and of vehicles compatible with the use of high biofuel blends or pure biofuels.
2. Member States shall ensure that information on the net benefits, cost and energy efficiency of equipment and systems for the use of heating, cooling and electricity from renewable sources is made available either by the supplier of the equipment or system or by the national competent authorities.
3. Without prejudice to Titles II and III of Directive 2005/36/EC, Member States shall develop accreditation schemes for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar heating systems and ground source heat pumps. Those schemes shall be based on the criteria laid down in Annex IV. Each Member State shall recognise accreditations awarded by other Member States in accordance with these criteria.
4. Member States shall develop guidance for planners and architects so that they are able properly to consider the use of energy from renewable sources and of district heating and cooling when planning, designing, building and renovating industrial or residential areas.

Article 12 – Access to the electricity grid

1. Member States shall take the necessary steps to develop grid infrastructure to accommodate the further development of electricity from renewable energy sources.
2. Without prejudice to the maintenance of the reliability and safety of the grid, Member States shall ensure that transmission system operators and distribution system operators in their territory guarantee the transmission and distribution of electricity produced from renewable energy sources. They shall also provide for

priority access to the grid system of electricity produced from renewable energy sources. When dispatching electricity generating installations, transmission system operators shall give priority to generating installations using renewable energy sources insofar as the security of the national electricity system permits.

3. Member States shall put into place a legal framework or require transmission system operators and distribution system operators to set up and publish their standard rules relating to the bearing and sharing of costs of technical adaptations, such as grid connections and grid reinforcements, which are necessary in order to integrate new producers feeding electricity produced from energy from renewable sources into the interconnected grid.

These rules shall be based on objective, transparent and non-discriminatory criteria taking particular account of all the costs and benefits associated with the connection of these producers to the grid. The rules may provide for different types of connection.

4. Where appropriate, Member States may require transmission system operators and distribution system operators to bear, in full or in part, the costs referred to in paragraph 3. Member States shall review and take the necessary measures to improve the frameworks and rules for bearing and sharing of costs referred to in paragraph 3 by 30 June 2011 and every two years thereafter to ensure the integration of new producers as referred to in that paragraph.
5. Member States shall require transmission system operators and distribution system operators to provide any new producer wishing to be connected to the system with a comprehensive and detailed estimate of the costs associated with the connection. Member States may allow producers of electricity from renewable energy sources wishing to be connected to the grid to issue a call for tender for the connection work.
6. The sharing of costs referred in paragraph 3 shall be enforced by a mechanism based on objective, transparent and non-discriminatory criteria taking into account the benefits which initially and subsequently connected producers as well as transmission system operators and distribution system operators derive from the connections.
7. Member States shall ensure that the charging of transmission and distribution fees does not discriminate against electricity from renewable energy sources, including in particular electricity from renewable energy sources produced in peripheral regions, such as island regions and regions of low population density.
8. Member States shall ensure that fees charged by transmission system operators and distribution system operators for the transmission and distribution of electricity from plants using energy from renewable sources reflect realisable cost benefits resulting from the plant's connection to the network. Such cost benefits could arise from the direct use of the low-voltage grid.

Article 13 –Environmental sustainability criteria for biofuels

1. Biofuels shall be taken into account for the following purposes only if they fulfil the criteria set out in paragraphs 2 to 5:

- a) measuring compliance with the requirements of this Directive concerning national targets;
 - b) measuring compliance with renewable energy obligations;
 - c) eligibility for financial support for the consumption of biofuels.
2. The greenhouse gas saving from the use of biofuels taken into account for the purposes referred to in paragraph 1 shall be at least []%.

In the case of biofuels produced by installations that were commissioned on or before 31 January 2008, the first subparagraph shall apply from 1 April 2013.

3. Biofuels taken into account for the purposes referred to in paragraph 1 shall not be made from raw material obtained from land that had one of the following statuses in January 2008:
- a) forest undisturbed by significant human activity, that is to say, forest where there has been no known significant human intervention or where the last significant human intervention was sufficiently long ago to have allowed the natural species composition and processes to have become re-established;
 - b) areas designated for nature protection purposes, unless evidence is provided that the production of biofuels did not interfere with those purposes.
4. Biofuels taken into account for the purposes referred to in paragraph 1 shall not be made from raw material obtained from land that had one of the following statuses in January 2008 and no longer had that status at the time that the raw material was obtained:
- a) wetlands, that is to say land that is covered with or saturated by water permly or for a significant part of the year, including peatland;
 - b) forest, that is to say land spanning more than 1 hectare with trees higher than 5 metres and a canopy cover of more than 30%, or trees able to reach these thresholds *in situ*;
 - c) permanent grassland, that is to say rangelands and pasture land which have been under grassland vegetation and pasture use for at least 20 years and are not forest.

Land predominantly under agricultural or urban land use shall not constitute forest within the meaning of point (b) of the first subparagraph.

Cropland, arable land, tillage land, set-aside land and agro-forestry systems shall not constitute permanent grassland within the meaning of point (c) of the first subparagraph.

5. Agricultural raw materials used for the production of biofuels taken into account for the purposes referred to in paragraph 1, cultivated in the Community, shall be

obtained in accordance with the provisions listed in point A of Annex III to Council Regulation 1782/2003/EC¹⁹ under the heading "Environment" and in accordance with the good agricultural and environmental condition on soil laid down in Annex IV of that Regulation.

6. Member States shall not refuse to take into account, for the purposes referred to in paragraph 1, biofuel obtained in compliance with this Article, on grounds of environmental sustainability.

Article 14 - Verification of compliance with the environmental sustainability criteria for biofuels

1. Where biofuels are to be taken into account for the purposes referred to in Article 13(1), Member States shall require fuel suppliers to show that the environmental sustainability criteria set out in Article 13 have been fulfilled. For this purpose they shall require fuel suppliers to use a mass balance system, under which:
 - a) consignments of raw material or biofuel with differing sustainability characteristics can be mixed;
 - b) information about these consignments' sustainability characteristics and proportions remains assigned to the mixture; and
 - c) it is ensured that the sum of all consignments withdrawn from the mixture is described as having the same sustainability characteristics, in the same proportions, as the mixture had.
2. Member States shall require fuel suppliers to arrange for an adequate standard of independent auditing of the information they submit, and to provide evidence that this has been done. The auditing shall verify that the systems used by fuel suppliers are accurate, reliable and fraud-resistant.
3. The Commission may accredit bilateral and multilateral agreements between the Community and third countries as sources of proof that biofuels produced from raw materials cultivated in those countries comply with the environmental sustainability criteria in Article 13(3) or Article 13(4).

The Commission may accredit voluntary international schemes setting standards for the production of biomass products as sources of accurate data for the purposes of Article 13(2) or as sources of proof that consignments of biofuel comply with the environmental sustainability criteria in Article 13(3) or 13(4).

The Commission may accredit national, multinational or international schemes to measure greenhouse gas savings as sources of accurate data for the purposes of Article 13(2).

¹⁹ OJ

4. The Commission shall only give accreditation in accordance with paragraph 3 if the agreement or scheme in question meets adequate standards of reliability, transparency and independent auditing. In the case of schemes to measure greenhouse gas savings, accreditation shall also be subject to compliance with the methodological requirements in Annex VII. Accreditation shall be conducted in accordance with the procedure referred to in Article 19(2).
5. Accreditation shall be valid for a period of no more than 5 years.
6. When a fuel supplier proffers proof or data obtained in accordance with an agreement or scheme that has been accredited in accordance with paragraph 3, a Member State shall not require the supplier to provide further evidence of compliance with the corresponding environmental sustainability criterion.
7. At the request of a Member State or on its own initiative the Commission shall examine the application of Article 13 in relation to a source of biofuel and, within one month of receipt of a request and after consulting the Committee referred to in Article 19(1), decide whether the Member State concerned may take biofuel from that source into account for the purposes listed in Article 13(1). The Commission shall communicate its decision to the Council and to the Member States.

Article 15 - Calculation of the greenhouse gas impact of biofuels

1. The greenhouse gas saving from biofuel use for the purposes of Article 13(2) shall be calculated as follows:
 - a) in the case of biofuel production pathways for which a default value for greenhouse gas savings is laid down in Part A of Annex VII, using that default value;
 - b) using an actual value calculated in accordance with the methodology laid down in Part B of Annex VII; or
 - c) using a value calculated as the sum of actual values for some of the steps of the production process and the disaggregated default values in Part C of Annex VII for the other steps of the production process.
2. By 31 March 2010 at the latest, Member States shall submit to the Commission a report including a list of NUTS 2 regions where the typical greenhouse gas emissions from cultivation of agricultural raw materials can be expected to be no higher than those under the heading "cultivation" in part C of Annex VII, and a description of the method and data used to establish that list. The method shall take into account soil characteristics, climate and expected raw material yields.
3. The default values in Part A of Annex VII and the disaggregated default values for cultivation in Part C of Annex VII shall apply only in respect of:
 - a) biofuels produced from agricultural raw materials cultivated outside the Community; and

- b) biofuels produced from agricultural raw materials cultivated in the European Union in regions included in the lists referred to in paragraph 2.
4. The default values in Annex VII, Parts A and C and the methodology in Annex VII, Part B may be adapted to technical and scientific progress in accordance with the procedure with scrutiny referred to in Article 19(3). Any such adaptation of the default values shall respect the following rules:
- a) where the contribution of a factor to overall emissions is small, or where there is limited variation, and where the cost or difficulty of establishing actual values is high, default values shall be typical of normal production processes;
 - b) where the contribution of a factor to overall emissions is high and the cost or difficulty of establishing actual values is low, default values shall be conservative compared to normal production processes.

Article 16 – The use of biofuels in diesel and petrol blends

1. Member States shall ensure that transport fuel suppliers make information available to the public on the availability of biofuels and other renewable transport fuels. For percentages of biofuels, blended in mineral oil derivatives, exceeding the limit value of 10% of biodiesel or of 10% of bioethanol by volume, Member States shall impose a specific labelling at the sales points.
2. Member States shall ensure that diesel fuel complying with the specifications set out in Annex V is made available by 31 December 2010 at the latest in all filling stations that sell diesel fuel.
3. Member States shall ensure that diesel fuel complying with the specifications set out in Annex VI is made available by 31 December 2013 at the latest in all filling stations that sell diesel fuel.

Article 17 – Support schemes

1. Support schemes that do not constitute state aid in the sense of Article 87 of the Treaty shall be designed so that they respect the provisions of paragraphs 2 to 5 of this Article. Support shall be limited to the difference between the cost of producing energy from energy from renewable sources, including a normal return on capital, and the market price.
2. In designing and managing support schemes for energy from renewable sources, Member States shall aim to provide long term market stability.
3. In their support schemes for energy from renewable sources in heating and cooling, Member States shall differentiate in favour of systems and equipment that achieve a significant reduction of energy consumption. Member States shall use energy or eco-labels or other appropriate certificates or standards developed at national or European level, where these exist, as the basis for such differentiation of support.

In the case of biomass, Member States shall differentiate in favour of conversion technologies that achieve a conversion efficiency of at least 85% for residential and commercial applications and at least 70% for industrial applications.

In the case of heat pumps, Member States shall differentiate in favour of heat pumps which achieve a coefficient of performance at least 35% higher than that referred to in Decision 2007/742/EC.

In the case of solar thermal equipment, Member States shall differentiate in favour of equipment and systems that achieve a conversion efficiency of at least 35%.

In assessing the conversion efficiency and input/output ratio of systems and equipment for the purposes of this paragraph, Member States shall use Community or, failing these, international procedures if such procedures exist.

4. In their support schemes for energy from renewable sources in transport, Member States shall differentiate in favour of biofuels produced from wastes, residues, grasses and ligno-cellulosic material. For the purposes of demonstrating compliance with renewable energy obligations, the contribution made by those biofuels shall be considered to be twice that made by other biofuels.
5. High-efficiency cogeneration plants as defined under Directive 2004/8/EC using energy from renewable sources shall be eligible to benefit from support schemes, where these exist, for renewable energy sources in electricity generation, renewable heating and cooling and high-efficiency cogeneration.
6. Member States shall clearly define any technical specifications which must be met by renewable energy equipment and systems in order to benefit from support schemes. Where European standards exist, including eco-labels, energy labels and other technical reference systems established by the European standardisation bodies, they shall be clearly indicated in such technical specifications. Such technical specifications shall not prescribe where the equipment and systems are to be certified.

Article 18 – Reporting

1. Member States shall submit a report to the Commission on progress in the promotion and use of energy from renewable sources by 30 June 2011 at the latest, and every 2 years thereafter.

The report shall detail in particular:

- a) the sectoral and overall shares of energy from renewable sources in the preceding two calendar years;
- b) the introduction and functioning of support schemes, including compliance with State aid rules and Article 18, and other measures to promote energy from renewable sources, and any developments in the measures used with respect to those set out in the Member State's national action plan;

- c) the functioning of the system of guarantees of origin for electricity and heat from energy from renewable sources; the measures taken to ensure the reliability and protection against fraud of the system; and any limits that the Member State has laid down, in accordance with Article 9(4) on the quantities of guarantees of origin to be taken into account for the purposes of Article 9(1);
 - d) progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of energy from renewable sources;
 - e) measures taken to ensure the transmission and distribution of electricity produced from energy from renewable sources, and to improve the framework or rules for bearing and sharing of costs referred to in Article 12(3);
 - f) developments in the availability and use of biomass resources for energy purposes;
 - g) land use and commodity price changes associated with increased use in the Community of biomass for energy, and associated positive and negative effects on food security;
 - h) the development and share of biofuels made from wastes, residues, grasses, straw and ligno-cellulosic material;
 - i) the estimated impact of biofuel production on biodiversity, water resources, water quality and soil quality; and
 - j) the estimated greenhouse gas savings due to the use of energy from renewable sources.
2. In estimating greenhouse gas savings from the use of biofuels, Member States may, for the purpose of the reports referred to in paragraph 1, use the typical values given in Annex VII, part A.
3. In their first report, Member States shall outline whether they intend to:
- a) establish a single administrative body responsible for processing authorisation, certification and licensing applications for renewable energy installations and providing assistance to applicants;
 - b) provide for automatic approval of planning and permit applications for renewable energy installations where the authorising body has not responded within the set time limits; and
 - c) indicate geographical locations suitable for exploitation of energy from renewable sources in land-use planning and for the establishment of district heating and cooling.
5. The Commission shall monitor the origin of biofuels consumed in the Community and analyse the impacts of their production on land use in the Community and the main third countries of supply of biofuels and exchange information with those third

countries as appropriate. Monitoring shall be based on Member States' reports and those of relevant third countries, international organisations, scientific studies and any other relevant pieces of information.

6. On the basis of the reports submitted by Member States pursuant to paragraph 1 and the analysis referred to in paragraph 5, the Commission shall report every two years to the European Parliament and the Council. The first report shall be submitted in 2012.

In reporting on greenhouse gas savings from the use of biofuels, the Commission shall use the values reported by Member States and shall, in addition, evaluate whether and how the estimate would change if co-products were accounted for using the substitution approach.

8. The Commission's first report shall be accompanied, if appropriate, by proposals to the European Parliament and to the Council on sustainability requirements for energy uses of biomass outside the transport sector. In this and subsequent reports, the Commission will in particular analyse the impact of increased demand for biofuel on sustainability in the EU and in third countries and propose, if appropriate, corrective action.
9. In its first report the Commission shall, with a view to facilitating the achievement of the targets set out in this Directive, assess the need for proposing a harmonised European renewable energy deployment support scheme.

Article 19 – Committee

1. The Commission shall be assisted by a Committee.
2. Where reference is made to this paragraph, Articles 5 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.
3. Where reference is made to this paragraph, Articles 5a(1) to (4) and Article 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.

Article 20 – Amendments and repeal

1. In Directive 2001/77/EC, Article 2, Article 3(2), and Articles 4 to 8 are deleted with effect from 1 April 2010.
2. In Directive 2003/30/EC, Article 2, Article 3(2), (3) and (5), and Articles 5 and 6 are deleted with effect from 1 April 2010.
3. Directives 2001/77/EC and 2003/30/EC are repealed with effect from 1 January 2012.

Article 21 - Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 31 March 2010 at the latest. They shall forthwith communicate to the Commission the text of those provisions and a correlation table between those provisions and this Directive.

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

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

Article 22

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

Article 23

This Directive is addressed to the Member States.

Done at Brussels, [...]

For the European Parliament
The President
[...]

For the Council
The President
[...]

Annex I – National overall targets for the share of energy from renewable sources in final consumption of energy in 2020

	Share of energy from renewable sources in final consumption of energy, 2005	Target for share of energy from renewable sources in final consumption of energy, 2020
Belgium	2.2%	
Bulgaria	9.4%	
The Czech Republic	6.1%	
Denmark	17.0%	
Germany	5.8%	
Estonia	18.0%	
Ireland	3.1%	
Greece	6.9%	
Spain	8.7%	
France	10.3%	
Italy	5.2%	
Cyprus	2.9%	
Latvia	34.9%	
Lithuania	15.0%	
Luxembourg	0.9%	
Hungary	4.3%	
Malta	0.0%	
The Netherlands	2.4%	
Austria	23.3%	
Poland	7.2%	
Portugal	20.5%	
Romania	17.8%	
Slovenia	16.0%	
The Slovak Republic	6.7%	
Finland	28.5%	
Sweden	39.8%	
United Kingdom	1.3%	

Annex II – Normalisation rule for accounting for electricity generated from hydropower

The following rule shall be applied for the purpose of accounting for electricity generated from hydropower:

$$Q_{Y(A)} = C_Y (Q_{Y-14}/C_{Y-14} + Q_{Y-13}/C_{Y-13} \dots + Q_Y/C_Y)/15,$$

where

$Q_{Y(A)}$ = the quantity of electricity considered to have been generated by a hydropower plant in year Y for accounting purposes;

Q_N = the quantity of electricity actually generated in year N by the plant, measured in GWh;
and

C_N = the installed capacity of the plant in year N , measured in MW.

Annex III – Energy content of transport fuels

Fuel	Energy content by weight (lower calorific value, MJ/kg)	Energy content by volume (lower calorific value, MJ/l)
Bioethanol	27	21
Bio-ETBE (ethyl-tertio-butyl-ether produced on the basis of bioethanol)	36 (of which 33% from renewable sources)	27 (of which 33% from renewable sources)
Biomethanol (methanol produced from biomass, to be used as biofuel)	20	16
Bio-MTBE (methyl-tertio-butyl-ether produced on the basis of bio-methanol)	35 (of which 20% from renewable sources)	26 (of which 20% from renewable sources)
Bio-DME (dimethylether produced from biomass, to be used as biofuel)	28	19
TAEE (tertiary-amyl-methyl-ether)	38 (of which 29% from renewable sources)	29 (of which 29% from renewable sources)
Biobutanol (butanol produced from biomass, to be used as biofuel)	33	27
Biodiesel	37	33
Fischer-Tropsch diesel (a synthetic hydrocarbon or mixture of synthetic hydrocarbons produced from biomass)	44	34
Hydrogenated vegetable oil (vegetable oil thermochemically treated with hydrogen)	44	34
Pure vegetable oil (oil produced from oil plants through pressing, extraction or comparable procedures, crude or refined but chemically unmodified, when compatible with the type of engines involved and the corresponding emission requirements)	37	34
Biogas (a fuel gas produced from biomass and/or from the biodegradable fraction of waste, that can be purified to natural gas quality, to be used as biofuel, or woodgas)	50	-
Petrol	43	32
Diesel	43	36

Annex IV - Accreditation of installers

The criteria referred to in Article 11(3) shall be as follows:

1. The accreditation process shall be transparent and clearly defined by the Member State or the administrative body they appoint.
2. Biomass, heat pump and solar photovoltaic and solar water heater installers shall be accredited through a certificate issued by an accredited training programme or training provider.
3. The accreditation of the training programme or provider shall be done by Member States or administrative bodies they appoint. The accrediting body shall ensure that the training programme offered by the training provider has continuity and regional or national coverage. The training provider shall have adequate technical facilities to provide practical training, including some laboratory equipment or corresponding facilities to provide practical training. The training provider shall also offer in addition to the basic training, shorter refresher courses on topical issues, including on new technologies, to enable life-long learning in installations. The training provider may be the manufacturer of the equipment or system, institutes or associations.
4. Accreditation shall be offered to installers with working experience, who have undergone, or are undergoing, the following types of training:
 - a) in the case of biomass boiler and stove installers: training as a plumber, pipe fitter, heating engineer or technician of sanitary and heating equipment as a prerequisite.
 - b) in the case of heat pump installers: training as a plumber or refrigeration engineer and have basic electrical and plumbing skills (cutting pipe, soldering pipe joints, gluing pipe joints, lagging, sealing fittings, testing for leaks and installation of heating systems) as a prerequisite;
 - c) in the case of a solar photovoltaic or solar water heater installer: training as a plumber, electrician, and have plumbing, electrical and roofing skills, including knowledge of soldering pipe joints, gluing pipe joints, sealing fittings, testing for plumbing leaks, ability to connect wiring, familiar with basic roof materials, flashing and sealing methods as a prerequisite; or
 - d) a vocational training scheme to provide an installer with adequate skills corresponding to a 3 years education in the skills referred to in point (a), (b) or (c) including both classroom and workplace learning.
5. The training leading to installer accreditation shall include both theoretical and practical parts. At the end of the training, the installer must have the skills required to install the relevant equipments and systems to meet the performance and reliability needs of the customer, incorporate quality craftsmanship, and comply with all applicable codes and standards, including energy and eco-labelling.
6. The theoretical part of the biomass stove and boiler installer training shall cover the market situation of biomass, ecological aspects, biomass fuels, logistics, building

laws, fire protection, subsidies, combustion techniques, firing systems, optimal hydraulic solutions, cost and profitability comparison as well as the design, installation, and maintenance of biomass boilers and stoves. The training shall also provide good knowledge of any European standards for technology and biomass fuels, such as pellets, and biomass related national and European legislation.

7. The theoretical part of the heat pump installer training shall cover market situation for heat pumps, geothermal resources and ground source temperatures of different regions, soil and rock identification for thermal conductivity, logistics, building laws, regulations on using geothermal resources, feasibility of using heat pumps in buildings and determining the most suitable heat pump system, and knowledge about their technical requirements, safety, air filtering, connection with the heat source and system layout. The training shall also provide good knowledge of any European standards for heat pumps, national and of relevant national and European legislation. The installer shall demonstrate the following key competences:
 - a) basic understanding of the physical and operation principles of a heat pump, including characteristics of the heat pump circle: context between low temperatures of the heat sink, high temperatures of the heat source, and the efficiency of the system, determination of the coefficient of performance (COP) and seasonal performance factor (SPF);
 - b) understanding of the components and their function within a heat pump circle, including the compressor, expansion valve, evaporator, condenser, fixtures and fittings, lubricating oil, refrigerant, superheating and sub-cooling and cooling possibilities with heat pumps;
 - c) ability to choose and size the components in typical installation situations, including determining the typical values of the heat load of different buildings and for hot water production based on energy consumption, determining the capacity of the heat pump on the heat load for hot water production, on the storage mass of the building and on interruptible current supply; determine buffer tank component and its volume and integration of a second heating system;

8. The theoretical part of the solar photovoltaic and solar water heater installer training shall cover the market situation of solar products, ecological aspects, components, characteristics and dimensioning of solar thermal systems, selection of accurate systems and dimensioning of components, determination of the heat demand, logistics, building laws, fire protection, subsidies, cost and profitability comparison as well as the design, installation, and maintenance of solar photovoltaic and solar water heaters. The training shall also provide good knowledge of any European standards for technology, and certification such as Solar Keymark, and related national and European legislation. The installer shall demonstrate the following key competences:
 - a) ability to work safely using the required tools and equipment and implementing safety codes and standards and identify plumbing, electrical and other hazards associated with solar installations;

- b) ability to identify systems and their components specific to active and passive systems, including the mechanical design, and determine the components' location and system layout and configuration;
 - c) ability to determine the required installation area, orientation and tilt for the solar photovoltaic and solar water heater, taking account of shading, solar access, structural integrity, the appropriateness of the installation for the building or the climate and identify different installation methods suitable for roof types and the balance of system equipment required for the installation;
 - d) for solar photovoltaic systems in particular, ability to adapt the electrical design, including determining design currents, selecting appropriate conductor types and ratings for each electrical circuit, determining appropriate size, ratings and locations for all associated equipment and subsystems and selecting an appropriate interconnection point.
9. The training course shall end with an examination leading to a certificate. The examination shall include a practical assessment of successfully installing biomass boilers or stoves, heat pumps, solar photovoltaic or solar water heaters.
10. The installer accreditation shall be time restricted, so that a refresher seminar or event would be necessary for continued accreditation.

Annex V – Specifications for a 7% blend of biodiesel in diesel

Parameter	Units	Limits		
		Minimum	Maximum	
Measured cetene		51	-	
Calculated cetane		46	-	
Density at 15°C	kg/m ³	820	845	
Polycyclic aromatic hydrocarbons	%wt	-	8	
Sulphur content	mg/kg	-	10	
Flash point	°C	>55	-	
Carbon residue in 10% distillation residue	%	-	0.3	
Ash content	mg/kg	-	0.01	
Water content	mg/kg	-	200	
Total contamination	mg/kg	-	24	
Copper strip corrosion (3h-50°C)	cotation	class 1		
Lubricity EN ISO 12156-1	µm	-	460	
Kinematic viscosity at 40°C	mm ² /s	2	4.5	
Distillation	% recovery at 250°C	%	-	<65
	% recovery at 350°C	%	85	-
	Temperature for 95% recovery	°C	-	360
FAME content EN14078	%	0	7	
Cloud point	°C	Ref. national standard		
Cold filter plugging point	°C	Ref. national standard		
Oxidation stability - EN14112	h	20	-	
Oxidation stability by ASTM D2274 at 115°C	g/m ³		25	
Additivation for stability		Anti-oxidant equivalent to BHT at 1000ppm		

Annex VI – Specifications for a 10% blend of biodiesel in diesel

Parameter	Units	Limits		
		Minimum	Maximum	
Measured cetene		51	-	
Calculated cetane		46	-	
Density at 15°C	kg/m ³	820	845	
Polycyclic aromatic hydrocarbons	%wt	-	8	
Sulphur content	mg/kg	-	10	
Flash point	°C	>55	-	
Carbon residue in 10% distillation residue	%	-	0.3	
Ash content	mg/kg	-	0.01	
Water content	mg/kg	-	200	
Total contamination	mg/kg	-	24	
Copper strip corrosion (3h-50°C)	cotation	class 1a		
Lubricity EN ISO 12156-1	µm	-	460	
Kinematic viscosity at 40°C	mm ² /s	2	4.5	
Distillation	% recovery at 250°C	%	-	<65
	% recovery at 350°C	%	85	-
	Temperature for 95% recovery	°C	-	360
FAME content EN14078	%	5	10	
Cloud point	°C	Ref. national standard		
Cold filter plugging point	°C	Ref. national standard		
Phosphorus content	mg/kg	-	0.2	
Acid index	mgKOH/g	-	0.05	
Peroxides EN ISO 3960		-	20	
Oxidation stability - EN14112	h	20	-	
Oxidation stability by ASTM D2274 at 115°C	g/m ³		25	
Acid index variation	mgKOH/g		0.12	
Injector fouling	Detergent additive package			
Additivation for stability	Anti-oxidant equivalent to BHT at 1000ppm			

Annex VII – Rules for calculating the greenhouse gas impact of biofuels and their fossil fuel comparators

A. Typical and default values

biofuel production pathway	greenhouse gas saving (typical)	greenhouse gas saving (default)
sugar beet ethanol	48%	35%
wheat ethanol (process fuel not specified)	21%	0%
wheat ethanol (lignite as process fuel in CHP plant)	21%	0%
wheat ethanol (natural gas as process fuel in conventional boiler)	45%	33%
wheat ethanol (natural gas as process fuel in CHP plant)	54%	45%
wheat ethanol (straw as process fuel in CHP plant)	69%	67%
corn (maize) ethanol, EU produced	56%	49%
sugar cane ethanol	74%	74%
the part from renewable sources of ETBE (ethyl-tertio-butyl-ether)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	44%	36%
sunflower biodiesel	58%	51%
palm oil biodiesel (process not specified)	32%	16%
palm oil biodiesel (process with no methane emissions to air at oil mill)	57%	51%
waste vegetable or animal oil biodiesel	83%	77%
hydrogenated vegetable oil from rape seed	49%	45%
hydrogenated vegetable oil from sunflower	65%	60%
hydrogenated vegetable oil from palm oil (process not specified)	38%	24%
hydrogenated vegetable oil from palm oil (process with no methane emissions to air at oil mill)	63%	60%
pure vegetable oil from rape seed	57%	55%
biogas from municipal organic waste as compressed natural gas	81%	75%
biogas from wet manure as compressed natural gas	86%	83%
biogas from dry manure as compressed natural gas	88%	85%

B. Methodology

1. Greenhouse gas emissions from the production and use of transport fuels shall be calculated as:

$$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{ccs} - e_{ccr} - e_{ee},$$

where

E = total emissions from the fuel;

e_e = emissions from the extraction or cultivation of raw materials;

e_l = annualised emissions from carbon stock changes caused by land use change;

e_p = emissions from processing;

e_{td} = emissions from transport and distribution;

e_u = emissions from the fuel in use;

e_{ccs} = emission savings from carbon capture and sequestration;

e_{ccr} = emission savings from carbon capture and replacement; and

e_{ee} = emission savings from excess electricity.

Emissions from the manufacture of machinery and equipment shall not be taken into account.

2. Greenhouse gas savings from biofuels shall be calculated as:

$$SAVING = (E_F - E_B)/E_F,$$

where

E_B = total emissions from the biofuel; and

E_F = total emissions from the fossil fuel comparator.

3. Emissions from the extraction or cultivation of raw materials, e_{ec} , shall include emissions from the extraction or cultivation process itself; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation. Certified reductions of greenhouse gas emissions from flaring at oil production sites anywhere in the world shall be deducted. N₂O emissions from soil shall be calculated

using N₂O emissions from unfertilised grassland as reference: the estimated emissions from this reference case shall be deducted from the estimated N₂O emissions from soil. Estimations of emissions from cultivation may be derived from the use of averages calculated for smaller geographical areas than those used in the calculation of the default values, as an alternative to using actual values.

4. Annualised emissions from carbon stock changes caused by land use change, e_l , shall be calculated by dividing total emissions equally over 20 years. For the calculation of these emissions the following rule shall be applied:

$$e_l = (CS_R - CS_A) \times 44/12 \times 1/20 \times 1/P,$$

where

e_l = annualised greenhouse gas emissions from carbon stock change due to land use change (measured as mass of CO₂-equivalent per unit biofuel energy);

CS_R = the carbon stock per unit area associated with the reference land use (measured as mass of carbon per unit area, including both soil and vegetation);

CS_A = the carbon stock per unit area associated with the actual land use (measured as mass of carbon per unit area, including both soil and vegetation);

P = the productivity of the crop (measured as biofuel energy per unit area per year).

5. For the purposes of paragraph 4, the following values may be used for CS :

land use	carbon stock (tons of carbon per hectare)
oil palm plantation	189
arable (including jatropha plantation; land that has been set aside in accordance with Article 2, paragraph 1 of Commission Regulation (EC) 796/2004 ²⁰ ; and land that was tropical forest, was cleared before January 2008, and is now abandoned)	82
desert	44

²⁰ Commission Regulation (EC) No 796/2004 of 21 April 2004 laying down detailed rules for the implementation of cross-compliance, modulation and the integrated administration and control system provided for in of Council Regulation (EC) No 1782/2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers Official Journal L 141 , 30/04/2004 P. 0018 - 0058

The following values may be used for P :

biofuel crop	biofuel yield (tons of oil equivalent per hectare)
jatropha	1.5
oil palm	4.0

Alternatively, actual values may be used.

6. Emissions from processing, e_p , shall include emissions from the processing itself; from waste and leakages; and from the production of chemicals or products used in processing.

In accounting for the consumption of electricity not produced within the fuel production plant, the greenhouse gas emission intensity of the production and distribution of that electricity shall be assumed to be equal to the average emission intensity of the production and distribution of electricity in a defined region. In exception to this rule:

- a) producers may use an average value for an individual electricity production plant for electricity produced by that plant, if that plant is not connected to the electricity grid;
 - b) producers may ascribe an emissions intensity of zero to each MWh of consumed electricity for which they transfer a guarantee of origin to a competent body in accordance with the provisions of Article 9, paragraph 1 c).
7. Emissions from transport and distribution, e_{td} , shall include emissions from the transport and storage of raw and semi-finished materials and from the storage and distribution of finished materials.
8. Emissions from the fuel in use, e_u , shall be zero for biofuels.
9. Emission savings from carbon capture and sequestration, e_{ccs} , shall be limited to emissions avoided through the capture and sequestration of emitted CO₂ directly related to the extraction, transport, processing and distribution of fuel.
10. Emission savings from carbon capture and replacement, e_{ccr} , shall be limited to emissions avoided through the capture of CO₂ produced in the process of fermentation and used to replace fossil-derived CO₂ used in commercial products and services.
11. Emission savings from excess electricity, e_{ee} , shall be taken into account in relation to the excess electricity produced by fuel production systems that use cogeneration and a fuel other than a co-product that is not an agricultural crop residue. In accounting for this excess electricity, the size of the cogeneration unit shall be assumed to be the minimum necessary for the cogeneration unit to supply the heat that is needed to produce the fuel. The greenhouse gas emission savings associated with this excess electricity shall be taken to be equal to the amount of greenhouse gas that would be emitted when an equal amount of electricity was generated in a power plant using the same fuel as the cogeneration unit.

12. Greenhouse gas emissions from fuels, E , shall be expressed in terms of grams of CO₂ equivalent per MJ of fuel, gCO_{2eq}/MJ.
13. The greenhouse gases taken into account for the purposes of paragraph 12 shall be CO₂, N₂O and CH₄. For the purpose of calculating CO₂ equivalence, these gases shall be valued as follows:

CO₂: 1

N₂O: 296

CH₄: 23

14. In exception to paragraph 12, values calculated in terms of gCO_{2eq}/MJ may be adjusted to take into account differences between fuels in useful work done, expressed in terms of km per MJ. Such adjustments shall only be made where evidence of the differences in useful work done is provided.
15. Where a fuel production process produces, in combination, the fuel for which emissions are being calculated and one or more other products ("co-products"), greenhouse gas emissions shall be divided between the fuel or its intermediate product and co-products in proportion to their energy content (determined by lower heating value in the case of co-products other than electricity).

Material that is used in the biofuel production process shall not be considered to be a co-product for this purpose.

16. For the purposes of the calculation referred to in paragraph 15, the emissions to be divided shall be $e_{ec} + e_l$, + those fractions of e_p , e_{td} and e_{ee} that take place up to and including the process step at which a co-product is produced. If any allocation to co-products has taken place at an earlier process step in the life-cycle, the fraction of those emissions assigned in the last such process step to the intermediate fuel product shall be used for this purpose instead of the total of those emissions.

In the case of biofuels, all co-products, including electricity that does not fall under the scope of paragraph 11, shall be taken into account for the purposes of this calculation, except for agricultural crop residues, including straw, bagasse, husks, cobs and nut shells. Agricultural crop residues shall be considered to have an energy content of zero for the purpose of the calculation. Co-products that have a negative energy content shall be considered to have an energy content of zero for the purpose of the calculation.

Wastes, including wine to be processed into ethanol under a crisis distillation scheme, and agricultural crop residues, including straw, bagasse, husks, cobs and nut shells, shall be considered to have zero life-cycle greenhouse gas emissions up to the process of collection of these materials.

In the case of fuels produced in refineries, the unit of analysis for the purposes of the calculation referred to in paragraph 15 shall be the refinery.

17. For the purposes of the calculation referred to in paragraph 2, the fossil fuel comparator shall be actual average emissions from petrol and diesel consumed in the EU as reported under [Directive 98/70/EC].

Until these data are available, the value used shall be 83.8. gCO_{2eq}/MJ.

C. Disaggregated values

Cultivation

biofuel production pathway	Typical GHG emitted (gCO _{2eq} /MJ)	Default GHG emitted (gCO _{2eq} /MJ)
sugar beet ethanol	13	13
wheat ethanol	19	19
corn (maize) ethanol, EU produced	20	20
sugar cane ethanol	13	13
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	30	30
sunflower biodiesel	18	18
palm oil biodiesel	18	18
waste vegetable or animal oil biodiesel	0	0
hydrogenated vegetable oil from rape seed	31	31
hydrogenated vegetable oil from sunflower	19	19
hydrogenated vegetable oil from palm oil	19	19
pure vegetable oil from rape seed	32	32
biogas from municipal organic waste as compressed natural gas	0	0
biogas from wet manure as compressed natural gas	0	0
biogas from dry manure as compressed natural gas	0	0

Processing

biofuel production pathway	Typical GHG emitted (gCO _{2eq} /MJ)	Default GHG emitted (gCO _{2eq} /MJ)
sugar beet ethanol	27	38
wheat ethanol (process fuel not specified)	45	63
wheat ethanol (lignite as process fuel in CHP plant)	45	63
wheat ethanol (natural gas as process fuel in conventional boiler)	25	35
wheat ethanol (natural gas as process fuel in CHP plant)	18	25
wheat ethanol (straw as process fuel in CHP plant)	5	7
corn (maize) ethanol, EU produced	15	21
sugar cane ethanol	1	1
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	15	22
sunflower biodiesel	15	22
palm oil biodiesel (process not specified)	33	47
palm oil biodiesel (process with no methane emissions to air at the oil mill)	13	18
waste vegetable or animal oil biodiesel	13	18
hydrogenated vegetable oil from rape seed	10	14
hydrogenated vegetable oil from sunflower	10	14
hydrogenated vegetable oil from palm oil (process not	28	40

specified)		
hydrogenated vegetable oil from palm oil (process with no methane emissions to air at the oil mill)	7	10
pure vegetable oil from rape seed	4	5
biogas from municipal organic waste as compressed natural gas	13	18
biogas from wet manure as compressed natural gas	7	9
biogas from dry manure as compressed natural gas	7	9

Transport and distribution

biofuel production pathway	Typical GHG emitted (gCO_{2eq}/MJ)	Default GHG emitted (gCO_{2eq}/MJ)
sugar beet ethanol	3	3
wheat ethanol	2	2
corn (maize) ethanol, EU produced	2	2
sugar cane ethanol	8	8
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	1	1
sunflower biodiesel	1	1
palm oil biodiesel	5	5
waste vegetable or animal oil biodiesel	1	1
hydrogenated vegetable oil from rape seed	1	1
hydrogenated vegetable oil from sunflower	1	1
hydrogenated vegetable oil from palm oil	5	5
pure vegetable oil from rape seed	1	1
biogas from municipal organic waste as compressed natural gas	3	3
biogas from wet manure as compressed natural gas	5	5
biogas from dry manure as compressed natural gas	4	4

Total

biofuel production pathway	Typical GHG emitted (gCO_{2eq}/MJ)	Default GHG emitted (gCO_{2eq}/MJ)
sugar beet ethanol	43	54
wheat ethanol (process fuel not specified)	66	84
wheat ethanol (lignite as process fuel in CHP plant)	66	84
wheat ethanol (natural gas as process fuel in conventional boiler)	46	56
wheat ethanol (natural gas as process fuel in CHP plant)	39	46
wheat ethanol (straw as process fuel in CHP plant)	26	28
corn (maize) ethanol, EU produced	37	43
sugar cane ethanol	21	22
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	47	53
sunflower biodiesel	35	41

palm oil biodiesel (process not specified)	57	70
palm oil biodiesel (process with no methane emissions to air at the oil mill)	36	41
waste vegetable or animal oil biodiesel	14	19
hydrogenated vegetable oil from rape seed	42	46
hydrogenated vegetable oil from sunflower	30	34
hydrogenated vegetable oil from palm oil (process not specified)	52	63
hydrogenated vegetable oil from palm oil (process with no methane emissions to air at the oil mill)	31	34
pure vegetable oil from rape seed	36	38
biogas from municipal organic waste as compressed natural gas	16	21
biogas from wet manure as compressed natural gas	12	14
biogas from dry manure as compressed natural gas	10	13