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from:	General Secretariat of the Council
to:	Delegations
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Subject:	Climate-energy legislative package - Proposal for a Directive of the European Parliament and of the Council on the promotion of the use of energy from renewable sources = Result of final trilogue: consolidated text

Delegations will find attached, for information, the consolidated draft text of the above Directive (based on the fourth column of doc. 16976/08). This text will, after adoption by the European Parliament of the corresponding amendments, be submitted to legal/linguistic revision before being transmitted to Council for adoption.

Please note that the order of the recitals is not definitive; an adequate re-ordering of the recitals will take place during the legal/linguistic revision.

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2008/0016 (COD)

DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

on the promotion of the use of energy from renewable sources

(Text with EEA relevance)

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 Articles 15, 16 and 17 of this Directive,

Having regard to the proposal from the Commission[1],
Having regard to the opinion of the European Economic and Social Committee[2],
Having regard to the opinion of the Committee of the Regions[3],
Acting in accordance with the procedure laid down in Article 251 of the Treaty[4],
Whereas:

(1) The control of European energy consumption and the increased use of energy from renewable sources, together with energy savings and increased energy efficiency, constitute important parts of the package of measures needed to reduce greenhouse gas emissions and 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. It also has an important part to play in promoting security of energy supply, promoting technological development and innovation and providing opportunities for employment and regional development, especially in rural and isolated areas.

1 OJ C , , p. .
2 OJ C , , p. .
3 OJ C , , p. .
4 OJ C , , p. .

(2) In particular, increased technological improvements, incentives for the use and expansion of public transport, use of energy efficiency technologies and use of energy from renewable sources in transport are some of the most effective tools by which the Community can reduce its dependence on imported oil in the transport sector – where the security of supply problem is most acute - and influence the fuel market for transport.

(3) Directive 2001/77/EC of the European Parliament and of the Council of 27 September 2001 on the promotion of electricity produced from renewable energy sources in the internal electricity market[1] and Directive 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 transport[2] established definitions for different types of renewable energy. Directive 2003/54/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in electricity and repealing Directive 96/92/EC[3] established definitions for the electricity sector in general. In the interests of stability and clarity it is appropriate to use the same definitions in this Directive.

(3a) The use of agricultural material such as manure, slurry and other animal and organic waste for biogas production has, in view of the high greenhouse gas emission savings potential, significant environmental advantages in terms of heat and power production and its use as biofuel. Biogas installations can, as a result of their decentralised nature and the regional investment structure, contribute significantly to sustainable development in rural areas and offer farmers new income opportunities.

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1 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).
2 OJ L 123, 17.5.2003, p. 42.
3 OJ L 176, 15.7.2003, p. 37.

(4) The Renewable Energy Roadmap 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, sustainable investments in the renewable energy sector which are capable of reducing dependence on imported fossil fuels and boosting the use of new energy technologies. Those targets exist in the context of the 20 % improvement in energy efficiency by 2020 set out in the Commission Communication of 19 October 2006 entitled "Action Plan for Energy Efficiency: Realising the Potential", which was endorsed by the Brussels European Council of March 2007 and by the European Parliament in its resolution of 31 January 2008 on an Action Plan for Energy Efficiency: Realising the Potential[1].

(4a) The opportunities for establishing economic growth through innovation and a sustainable competitive energy policy have been recognised. Renewable energy production often depends on local or regional small and medium-sized enterprises (SMEs). The opportunities for growth and employment that regional and local renewable energy investments bring about in the Member States and their regions are important. The Commission and the Member States therefore should support national and regional development measures in those areas, encourage the exchange of best practices in renewable energy production between local and regional development initiatives and promote the use of structural funding is this area.

1 COM(2006) 848

(5) The Brussels European Council of March 2007 reaffirmed the Community's commitment to the Community-wide development of renewable energies beyond 2010. It endorsed a mandatory target of a 20% share of renewable energies in overall Community 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, to be introduced in a cost-effective way. 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/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC being amended to allow for adequate levels of blending. The Brussels European Council of March 2008 repeated that it is essential to develop and fulfil effective sustainability criteria for biofuels and ensure the commercial availability of second generation biofuels. The Brussels European Council of June 2008 referred again to the sustainability criteria and the development of second generation biofuels, and underlined the need to assess the possible impacts of biofuel production on agricultural food products and to take action, if necessary, to address shortcomings; furthermore, it stated that further assessment should be made of the environmental and social consequences of the production and consumption of biofuels.

(5a) To obtain an energy model that supports renewable energies there is a need to encourage strategic cooperation between Member States, involving as appropriate regions and local authorities.

(6) The main purpose of binding targets is to provide certainty for investors and to encourage continuous development of technologies which generate energy from all types of renewable sources. Deferring a decision about whether a target is binding until a future event takes place is thus not appropriate.

(6a) Improvement of energy efficiency is a key objective of the European Union, aiming to achieve a 20% improvement in energy efficiency by 2020. This objective together with existing and future legislation including the energy efficiency Directive, the Buildings Directive and the Ecodesign Directive, will have a critical role to play in ensuring that the climate and energy objectives are being achieved at least cost, and can also provide new opportunities for the EU economy. Energy efficiency and energy saving policies will be for each Member State among the most effective methods in order to increase the percentage share of energy from renewable sources, and therefore more easily achieve the energy renewable sources targets laid down by this Directive, both the overall national target and the transport target. Each Member State should assess, when evaluating its expected final energy consumption in its renewable action plan, the contribution which energy efficiency and energy saving measures can make in order to achieve its national targets as set out in parts A and B of Annex I.

(6b) It will be incumbent upon Member States to make significant improvements in energy efficiency in all sectors in order more easily to achieve their renewable energy targets, which are expressed as a percentage of final energy consumption. The need for energy efficiency in the transport sector is imperative because a binding percentage target for renewable energy is likely to become increasingly difficult to achieve sustainably if overall demand for energy for transport continues to rise. The mandatory 10 % minimum target to be achieved by all Member States should therefore be defined as that share of final energy consumed in transport which is to be achieved from renewable sources, not from biofuels alone.

(7) The European Parliament, in its Resolution on the Roadmap for Renewable Energy in Europe, 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 Community and Member State level.

(8) 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 renewable energy and a 10% share of renewable energy in transport in the European Union's consumption in 2020.

(9) 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 for 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 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 weighted by their Gross Domestic Product, modulated to reflect national starting points, and by accounting in terms of final energy consumption, with account being taken of Member States' past efforts with regard to the use of energy from renewable sources.

(10) 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 target for the use of renewable energy in transport solely from domestic production, it is both likely and desirable that the target will in fact be met through a combination of domestic production and imports. To this end, the Commission should monitor the supply of the Community market for biofuels, and should, as appropriate, propose relevant measures to achieve a balanced approach between domestic production and imports, taking into account the development of multilateral and bilateral trade negotiations as well as environmental, social, cost, energy security and other considerations.

(10a) Some Member States have a large share of aviation in their gross final energy consumption. In view of the current technological and regulatory constraints that prevent the commercial use of biofuels in aviation, it is appropriate to provide a partial exemption for such Member States, by excluding from the calculation of their gross final energy consumption in national air transport, the amount by which they exceed one and a half times the EU average for the gross final energy consumption at EU level in aviation in 2005 as assessed by Eurostat, i.e. 6,18%. Some Member States of an insular and peripheral character, i.e. Cyprus and Malta, rely on aviation as an mode of transport which is essential for their citizens and economy and as a result have a gross final energy consumption in national air transport which is disproportional, i.e. more than three times the EU average in 2005, are thus disproportionately affected by the current technological and regulatory constraints; for these Member States it is appropriate to provide that this exemption covers the amount by which they exceed the EU average for the gross final energy consumption at EU level in aviation in 2005 as assessed by Eurostat, i.e. 4,12%.

(10b) Member States should aim to diversify the renewable energy mix in each transport sector. The Commission should present a report to the European Parliament and to the Council by 1 June 2015 outlining the potential for increasing the use of renewable energy in each transport sector.

(11) To ensure that the mandatory overall targets are achieved, Member States should work towards an indicative trajectory tracing a path towards the achievement of their final mandatory targets. They should establish a national renewable energy action plan including information on sectoral targets, while having in mind that there are different uses of biomass and therefore it is essential to mobilise new biomass resources. In addition, they should set out their measures to achieve these targets. Member States should take into account the optimal combination of energy efficiency technologies with renewables.

(12) To permit the benefits of technological advance and economies of scale to be reaped, the indicative trajectory should take into account the possibility of a more rapid growth in the use of energy from renewable sources in later years. In this way, special attention can be given to sectors that disproportionately suffer from the absence of technological advance and economies of scale and therefore remain under-developed, but which in future could significantly contribute to reaching the targets for 2020.

(13) 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.

(13a) Whilst having due regard to the provisions of this Directive, Member States should be encouraged to pursue all appropriate forms of cooperation in relation to the objectives set by this Directive. Such cooperation can take place at all levels, bilaterally or multilaterally; it can, apart from the mechanisms with effect on target calculation and target compliance, which are exclusively foreseen by this Directive, i.e. statistical transfers between Member States, joint renewable energy projects and joint support schemes, also take the form of, for example, the exchange of information and best practices, such as foreseen in particular in the transparency platform, and other voluntary coordination between all types of support schemes.

(13b) It is desirable that energy prices reflect external costs of energy production and consumption, including as appropriate social, environmental and health care costs.

(13c) The achievement of the objectives of this Directive requires that the Community and Member States dedicate a significant amount of financial resources to the research and development of renewable energy technologies. The European Institute of Innovation and Technology should give high priority to the research and development of renewable energy technologies.

(13d) The development of renewable energy projects, including "renewable energy projects of European interest" under the Trans-European-Network for Energy (TEN-E) Programme should be accelerated. To that end, the Commission should also analyse how the financing of such renewable energy projects can be improved.
A particular attention should be paid to renewable energy projects that will contribute to increase significantly the energy security in the Community and neighbouring countries.

(13e) Public support is necessary to reach the Community's objectives with regard to the expansion of electricity produced from renewable sources, in particular for as long as electricity prices in the internal market do not reflect the full social and environmental costs and benefits of energy sources used.

(13f) When favouring the development of the market for renewable energy sources, it is necessary to take into account the positive impact on regional and local development opportunities, export prospects, social cohesion and employment opportunities, especially as concerns SMEs as well as independent power producers

(13g) Member States may encourage local and regional authorities to set targets in excess of national targets and to involve local and regional authorities in drawing up national action plans and in raising awareness of the benefits of renewable energy.

(14) It is necessary to set transparent and unambiguous rules for calculating the share of energy from renewable sources and for defining what such sources are. In this context the energy present in oceans and other water bodies in the form of waves, marine currents, tides, ocean thermal energy gradients or salinity gradients should be included.

(14a) In order to cut greenhouse gas emissions within the European Union and reduce its dependence on energy imports, the development of renewable energies should be closely linked to increased energy efficiency.

(15) In calculating the contribution of hydropower and wind power, the effects of climatic variation should be smoothed through the use of a normalisation rule. Electricity produced in pumped storage units from water that has previously been pumped uphill should not be considered to be electricity produced from renewable energy sources.

(16) Heat pumps enabling the use of ambient heat at a useful temperature level need electricity or other auxiliary energy to function. Therefore, the energy used to drive heat pumps should be deducted from the total usable heat. Only heat pumps whose output significantly exceeds the primary energy needed to drive it shall be taken into account.

(17) 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.

(17a) It is appropriate to support the demonstration and commercialisation phase for decentralised renewable technologies. The move towards decentralised energy production has many benefits such as utilisation of local energy sources, increased local security of supply, shorter transport distances and reduced energy transmission losses. It also fosters community development and cohesion, by providing income sources and creating jobs locally.

(17b) In order to exploit the full potential of biomass, the Community and the Member States should promote greater mobilisation of existing timber reserves and the development of new forestry systems.

(18) Imported electricity, produced from renewable energy sources outside the Community, may count towards Member States' targets. However, to avoid a net increase in greenhouse gas emissions through the diversion of existing renewable sources and their complete or partial replacement by conventional energy sources, only electricity generated by renewable energy installations that become operational after the entry into force of this Directive should be eligible to be counted. In order to guarantee an adequate effect of renewable energy replacing conventional energy in the Community as well as in third countries it is appropriate to ensure that such imports can be tracked and accounted for in a reliable way. Agreements with third countries concerning the organisation of this trade in electricity from renewable energy sources will be considered. If, by virtue of a decision taken under the Energy Community Treaty to that effect, the contracting parties to that treaty become bound by the relevant provisions of this Directive, the measures of co-operation between Member States foreseen in this Directive will be applicable to them.

(18a) When Member States undertake joint projects with a third country regarding the generation of electricity from renewable sources, it is appropriate that these joint projects only relate to newly constructed installations, or to installations with newly increased capacity. This will help ensure that the proportion of energy from renewable sources in the third country's total energy consumption is not reduced on account of the import of renewable energy into the Community. In addition, the Member States concerned should facilitate the concerned country or countries' domestic use of part of the production from the installations covered by the joint project. Furthermore, the third countries involved in joint projects should be encouraged by the Commission and Member States to develop a renewable energy policy including ambitious targets.

(18b) Noting that projects of high European interest in third countries, such as the Mediterranean Solar Plan, may need a long lead-time before being fully interconnected to the territory of the Community, it is appropriate to facilitate their development by allowing Member States to take into account in their national targets a limited amount of electricity produced by such projects during the construction of the interconnection.

(19) To create opportunities for reducing the cost of achieving the targets laid down in this Directive, it is appropriate both 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, heating and cooling consumed in other Member States towards their own national targets. For this reason, flexibility measures are required, but they remain under Member States' control in order not to affect their ability to reach their national targets. These flexibility measures take the form of statistical transfers, joint projects between Member States and/or joint support schemes.

[Note: recitals 20 to 23 deleted]

(23a) Guarantees of origin, issued for the purpose of this Directive have the sole function of proving to a final customer that a given share or quantity of energy was produced from renewable sources. A guarantee of origin may be transferred, independently of the energy to which it relates, from one holder to another. However, with a view to ensure that a unit of electricity from renewables energy sources can only be disclosed once to a customer, double counting and double disclosure of guarantees of origin must be avoided: renewable energy of which the accompanying guarantee of origin was sold separately by the producer may not be disclosed or sold to the final customer as energy produced from renewable sources. It is important to distinguish between green certificates used for support schemes and guarantees of origin.

(23b) It is important to provide information on how the supported energy is allocated to final customers of energy for purposes of Article 3(6) of Directive 2003/54/EC. In order to improve the quality of this information to consumers, in particular as regards the amount of energy from renewable sources produced by new installations, the Commission should assess the effectiveness of the measures taken by Member States.

(23c) It is appropriate to allow the emerging consumer market for green electricity to contribute to the construction of new installations for renewable energy. Therefore, Member States may require energy suppliers disclosing their energy mix to final customers in accordance with Article 3(6) of Directive 2003/54/EC, to include a minimum percentage of guarantees of origin from recently constructed installations producing renewable energy, provided that this is in conformity with Community law.

(23d) Directive 2004/8/EC creates guarantees of origin for proving the high efficiency of cogeneration plants; such guarantees of origin cannot be used in disclosing the use of renewable energy in accordance with Article 3(6) of Directive 2003/54/EC as this would not exclude the risk of double counting and double disclosure.

23e) Guarantees of origin do not by themselves confer a right to benefit from national support schemes.

(24) 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 renewable energy 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.

(24a) For the benefit of rapid deployment of renewable energies and in view of their overall high sustainable and environmental beneficial quality, Member States should, when applying administrative rules, planning structures and legislation which are designed for licensing installations in respect to pollution reduction and control for industrial plants, for combating air pollution and for the prevention of minimisation of the discharge of dangerous substances in the environment, take into account the contribution of renewable sources of energy towards meeting environmental and climate change objectives, especially when compared to non-renewable energy installations.

(24b) In order to stimulate the contribution of individual citizens to the objectives set out in this Directive, the relevant authorities should consider the possibility to replace authorisations by simple notification to the competent body when installing small decentralised renewable devices.

(24c) The coherence between the objectives of this Directive and the EU environmental legislation should be ensured. In particular, during the assessment, planning or licensing procedures for renewable energy installations, Member States should take account of all EU environmental legislation, and of the contribution of renewable sources of energy towards meeting environmental and climate change objectives, especially when compared to non-renewable energy installations.

(25) 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 regulations[1], 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 or by a specified entity.

(26) 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, while promoting more energy-efficient renewable energy applications in building codes and regulations.

(26a) It may be appropriate for Member states, in order to facilitate and speed up the setting of minimum levels for the use of energy from renewable sources in buildings, to provide that such levels are achieved by incorporating a factor for renewable energy in meeting minimum energy performance requirements under Directive 2002/91/EC, relating to a cost-optimal reduction of carbon emissions per buildings.

(26b) It is appropriate for Member States to consider mechanisms for the promotion of district heating and cooling from renewable energies.

(27) 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

(28) As far as the access or pursuit of the profession of installer is a regulated profession, the preconditions for the recognition of professional qualifications are laid down in Directive 2005/36/EC on the recognition of professional qualifications. Therefore, this Directive applies without prejudice to Directive 2005/36/EC.

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1 OJ L 204, 21.7.1998.

(29) 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 an optimal combination of renewable energy sources and high-efficiency technologies in their plans and designs. Member States should therefore provide clear guidance. This should be done without prejudice to the provisions of Directive 2005/36/EC and in particular Articles 46 and 49 thereof.

(29a) There is a need to support renewable energy utility grid integration as well as the use of energy storage systems for integrated intermittent renewable energy production.

(30) The costs of connecting new producers of electricity and gas from renewable energy sources to the electricity and gas grids should be objective, transparent and non-discriminatory and due account should be taken of the benefit that embedded generators of electricity from renewable sources and local producers of gas from renewable sources bring to the electricity and gas grids.

(30a) Electricity producers who want to exploit the potential of renewable energies in the peripheral regions of the Community, in particular in island regions and regions of low population density, should whenever feasible benefit from reasonable connection costs in order to ensure that they are not unfairly disadvantaged in comparison with producers situated in more central, more industrialised and more densely populated areas.

(30b) The procedure used by the administration responsible for supervising authorisation, certification and licensing renewable energy plants should be objective, transparent, non-discriminatory and proportionate when applying the rules to specific projects. In particular, it is appropriate to avoid any unnecessary burden that could arise by classifying renewable energy projects under installations which represent a high health risk.

(31) In certain circumstances it is not possible to fully ensure transmission and distribution of electricity produced from renewable energy 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. Nevertheless, the objectives of this Directive require a sustained increase in the transmission and distribution of electricity produced from renewable energy sources without affecting the reliability and safety of the grid system. To this effect, Member States should take appropriate measures in order to allow a higher penetration of electricity from renewable sources, inter alia by taking into account the specificities of variable resources and resources which are not yet storable. To the extent required by the objectives set out in this Directive, the connection of new renewable installations should be allowed as soon as possible. To this effect in order to accelerate grid connection procedures, Member States may provide for priority connection or reserved connection capacities for new installations producing electricity from renewable energy sources.

(32) 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 integration actually achieved. For this reason it is necessary to strengthen the framework and to review its application periodically at national level.

(32a) Priority access and guaranteed access for electricity from renewable energy sources are important for integrating renewable energy sources into the internal market in electricity, in line with the Article 11(2) and developing further Article 11(3) of Directive 2003/54/EC. Requirements relating to the maintenance of the reliability and safety of the grid and to the dispatching may differ according to the characteristics of the national grid and its secure operation. Priority access to the grid provides an assurance given to connected generators of electricity from renewable energy sources that they will be able to sell and transmit the electricity from renewable energy sources in accordance with connection rules at all times, whenever the source is available. In case the electricity from renewable energy sources is integrated into the spot market, guaranteed access ensures that all electricity sold and supported gets access to the grid, allowing the use of a maximum of electricity from renewable energy sources from installations connected to the grid. However, this does not imply any obligation of Member States to support or to introduce purchase obligations for renewable energy. In other systems, a fixed price is defined for electricity from renewable energy sources, usually in combination with a purchase obligation for the system operator. In this case priority access is already given.

(33) Interconnection among countries eases integration of electricity from renewable energy sources. Besides smoothing variability, interconnection can reduce balancing costs, encourage true competition bringing about lower prices, and support the development of networks. Also, the sharing and optimal use of transmission capacity could help avoid excessive new build.

(33a) The European Community and the Member States should strive to reduce total consumption of energy in transport and increase energy efficiency in transport. The principal means of reducing consumption of energy in transport include transport planning, support for public transport, increasing the share of electric cars in production and producing cars which are more energy efficient and smaller both in size and in engine capacity.

(34) Biofuel production should be sustainable. Biofuels used for compliance with the targets laid down in this Directive, and those that benefit from national support schemes, should therefore be required to fulfil sustainability criteria.

(34a) The European Community should take appropriate steps in the context of this Directive, including the promotion of sustainability criteria for biofuels and the development of second and third-generation biofuels in the European Community and worldwide, and to strengthen agricultural research and knowledge creation in these areas.

(35) The introduction of sustainability criteria for biofuels will not achieve its objective if it leads to products that do not fulfil the criteria and would otherwise have been used as biofuels being used, instead, as bioliquids in the heating or electricity sectors. For this reason, the sustainability criteria should also apply to bioliquids in general.

(36) The European Council of March 2007 invited the Commission to propose a comprehensive Directive on the use of all renewable energy sources, which could contain criteria and provisions to ensure sustainable provision and use of bioenergy. These sustainability criteria should form a coherent part of a wider scheme covering also bioliquids and not biofuels alone. Such sustainability criteria should therefore be included in this Directive. In order to ensure a coherent approach between energy and environment policies, and to avoid the additional costs to business and the environmental incoherence that would be associated with an inconsistent approach, it is essential to provide the same sustainability criteria for biofuels used for the purposes of this Directive on the one hand, and for the purposes of Directive 98/70/EC on the other hand. Furthermore, the Commission and the competent national authorities should coordinate their activities in the framework of a Committee specifically responsible for sustainability aspects. For the same reasons, double reporting should be avoided in this context. The Commission should in addition review by 2009 the possible inclusion and the modalities of including other biomass applications.

(37) If land with high stocks of carbon in its soil or vegetation is converted for the cultivation of raw materials for biofuels and other bioliquids, some of the stored carbon will generally be released into the atmosphere, leading to the formation of carbon dioxide. The negative greenhouse gas impact of this can offset the positive greenhouse gas impact of the biofuels or bioliquid, in some cases by a wide margin. The full carbon effects of such conversion should therefore be accounted for in calculating the greenhouse gas savings of particular biofuels and other bioliquids. This is necessary to ensure that the greenhouse gas saving calculation takes into account the totality of the carbon effects of the use of biofuels and other bioliquids.

(37a) In calculating the greenhouse gas impact of land conversion, economic operators should be able to use actual values for the carbon stocks associated with the reference land use and the land use after conversion. They should also be able to use standard values. The work of the Intergovernmental Panel on Climate Change is the appropriate basis for this. That work is not currently expressed in a form that is immediately usable by economic operators. The Commission should therefore produce guidance drawing on this work to serve as the basis for the calculation of carbon stock changes for the purposes of this Directive, including as regards forested areas with a canopy cover of between 10 to 30%, savannahs, scrublands and prairies.

(37b) It is appropriate for the Commission to develop methodologies with a view to assessing the impact of the drainage of peatlands on greenhouse gas emissions.

(38) In order to prevent unnecessary burdensome research by economic operators and in order to prevent conversion of high-carbon-stock land that with hindsight would prove to be not eligible for producing raw materials for biofuels and other bioliquids, those types of land whose carbon stock loss upon conversion could not, within a reasonable period taking into account the urgency of tackling climate change, be compensated by the greenhouse gas savings of producing biofuels and other bioliquids, should not be converted for the production of biofuels and other bioliquids. Inventories of worldwide carbon stocks lead to the conclusion that wetlands and continuously forested areas with canopy cover of more than 30% should be included in this category. Forested areas with a canopy cover between 10 and 30% should also be included, unless evidence is provided that their carbon stock is low enough to justify their conversion in accordance with the rules laid down in this Directive. The reference to wetlands should take into account the definition contained in the Ramsar Convention.

(39) The incentives provided for in this Directive for biofuels and other bioliquids, and the increasing worldwide demand for biofuels and other bioliquids, should not have the effect of encouraging the destruction of bio-diverse lands. Such exhaustible resources, recognised in various international instruments to be of value to all mankind, should be preserved. Consumers in the Community, in addition, would find it morally unacceptable that their increased use of biofuels and other bioliquids could have the effect of destroying bio-diverse lands. For these reasons, it is necessary to provide sustainability criteria ensuring that biofuels and other bioliquids can only qualify for the incentives when it can be guaranteed that they do not originate in bio-diverse areas (or, in the case of areas designated for nature protection purposes or for the protection or rare, threatened or endangered ecosystems or species, that the production of the raw material does not interfere with those purposes, through the provision of legal evidence by the relevant competent authority). The sustainability criteria chosen consider forest as bio-diverse where it is a primary forest (following the definition used by the Food and Agriculture Organisation of the United Nations (FAO) in its Global Forest Resource Assessment, which countries globally use to report on the extent of primary forest) or where it is protected by national laws for nature protection purposes. Areas where collection of non-wood forest products occurs are included, provided the human impact is small. Other types of forests as defined by the FAO, such as modified natural forests, semi-natural forests and plantations, should not be considered as primary forests. Further, considering the highly biodiverse nature of certain grasslands, both temperate and tropical, including highly biodiverse savannahs, steppes, scrublands and prairies, it is also appropriate that biofuels made from raw materials originating in such lands should not qualify for the incentives provided for by this Directive. The Commission should establish appropriate criteria and/or geographical ranges to define such highly biodiverse grasslands in accordance with the best available scientific evidence and relevant international norms.

(39a) When appropriate, the Commission should take due account of the Millennium Ecosystem Assessment which contains useful data for the conservation of at least those areas that provide basic ecosystem services in critical situations such as watershed protection and erosion control.

(40) The incentives provided for in this Directive will encourage increased production of biofuels and other bioliquids worldwide. Where biofuels and other bioliquids are made from raw material produced within the Community, they should also comply with Community environmental requirements for agriculture, including requirements for the protection of the quality of groundwater and surface water, and with social requirements. However, there is a concern that production of biofuels and other bioliquids in certain third countries might not respect minimum environmental or social requirements. It is therefore appropriate to encourage the development of multilateral and bilateral agreements and voluntary international or national schemes that cover key environmental and social considerations, in order to promote the production of biofuels and other bioliquids worldwide in a sustainable manner. In the absence of such agreements or schemes, Member States shall require economic operators to report on these issues.

(40a) It is appropriate to monitor the impact of biomass cultivation, such as through land use changes, including displacement, the introduction of invasive alien species and other effects on biodiversity, and effects on food production and local prosperity. The Commission should consider all relevant sources of information, including the FAO hunger map. Biofuels should be promoted in a way that encourages greater agricultural productivity and the use of degraded land.

(41) Sustainability criteria will be effective only if they lead to changes in the behaviour of market actors. Market actors will change their behaviour only if biofuels and other bioliquids meeting these criteria command a price premium compared to those that do not. According to the mass balance method of verifying compliance, there is a physical link between the production of biofuels and other bioliquids meeting the sustainability criteria and the consumption of biofuels and other bioliquids in the Community, providing an appropriate balance between supply and demand and ensuring a price premium that is greater than in systems where there is no such link. Therefore, to ensure that biofuels and other bioliquids meeting the sustainability criteria can be sold at a higher price, maintaining the integrity of the system while at the same time avoiding imposing an unreasonable burden on industry, the mass balance system should be used to verify compliance. Other verification methods should however be reviewed.

(42) It is in the interest of the Community to encourage the development of multilateral and bilateral agreements, and voluntary international or national schemes setting standards for the production of sustainable biofuels and other bioliquids, and certifying that production of biofuels and other bioliquids meets those standards. For that reason, provision should be made to decide that such agreements or schemes provide reliable evidence and data, provided that they meet adequate standards of reliability, transparency and independent auditing.

(43) It is necessary to lay down clear rules for the calculation of greenhouse gas emissions from biofuels and other bioliquids and their fossil fuel comparators.

(43a) Global demand for agriculture commodities is growing. A part of this increased demand will be met through an increase in the amount of land devoted to agriculture. The restoration of land that has been severely degraded or heavily contaminated and therefore cannot be used, in its present state, for agricultural purposes is a way of increasing the amount of land available for cultivation. Because the promotion of biofuels and other bioliquids will contribute to the growth in demand for agricultural commodities, the sustainability scheme should promote the use of restored degraded land. Even if biofuels themselves are made using raw materials from land already in arable use, the net increase in demand for crops caused by the promotion of biofuels could lead to a net increase in the cropped area. This could be into high carbon stock land, in which case there would be damaging carbon stock losses. To alleviate this risk, it is appropriate to introduce accompanying measures to encourage an increased rate of productivity increases on land already used for crops; the use of degraded land; and the adoption of sustainability requirements, comparable to those laid down in this Directive for EU biofuel consumption, in other biofuel-consuming jurisdictions. The Commission shall develop a concrete methodology to minimise greenhouse gas emissions caused by indirect land use changes. In doing this the Commission shall analyse, on the basis of best available scientific evidence, in particular, inter alia, the inclusion of a factor for indirect land use changes in the calculation of greenhouse gas emissions and the need to incentivise sustainable biofuels which minimise the impacts of land use change and improve biofuel sustainability with respect to indirect land use change. In developing this methodology, the Commission should inter alia address the potential indirect land use change effects of biofuels produced from non-food cellulosic material and from ligno-cellulosic material.

(43b) The quotient obtained by dividing the molecular weight of CO_2 (44.010 g/mol) by the molecular weight of carbon (12.011 g/mol) is equal to 3.664.

(44) In the calculation of greenhouse gas emissions from the production and use of fuels, co-products should be accounted for. For policy analysis purposes the substitution method is appropriate. For regulatory purposes concerning individual operators and individual consignments of transport fuels, the substitution method is not appropriate. In these cases the energy allocation method is the most appropriate method to use, because it is easy to apply, predictable over time, minimises counter-productive incentives and gives results that are generally comparable with the range of results given by the substitution method. For policy analysis purposes the Commission should also, in its reporting, give results using the substitution method.

(45) In order to avoid a disproportionate administrative burden, a list of default values should be laid down for common biofuel production pathways and this should be updated and expanded when further reliable data is available. Biofuels and other bioliquids 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.

(45a) It is appropriate for the data used in the calculation of these default values to be obtained from independent scientific expert sources and updated as appropriate as these sources progress their work. The Commission should encourage these sources to address, in their updating work, emissions from cultivation; the effect of regional and climatological conditions; the effects of cultivation using sustainable agricultural and organic farming methods; and the scientific contributions of producers both in third countries and within the Community and of civil society.

(46) In order to avoid encouraging the cultivation of raw materials for biofuels and other bioliquids 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 reliably be ruled out. However, to avoid a disproportionate administrative burden, it is appropriate for Member States to establish national or regional averages for emissions from cultivation, including from fertiliser use.

(47) The requirements for a sustainability scheme for energy uses of biomass, other than bioliquids and biofuels, should be analysed by the Commission by 2009, taking into account the need for biomass resources to be managed in a sustainable manner.

(48) In order to permit the achievement of an adequate market 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.

(49) In order to ensure that biofuels that diversify the range of feedstocks used become commercially viable, these biofuels should receive an extra weighting under national biofuel obligations.

(50) Regular reporting is needed to ensure a continuing focus on progress in the development of renewable energy at national and Community level. It is appropriate to require the use of a harmonised template for national renewable energy action plans which Member States should submit. These plans could include estimated costs and benefits of the measures envisaged, measures relating to the necessary extension and/or reinforcement of the existing grid infrastructure, estimated costs and benefits to develop renewable energies in excess of the level required by the indicative trajectory, information on national support schemes and information on their use of renewable energy in new or refurbished buildings.

(51) Member States have different renewable potentials and operate different schemes of support for energy from renewable sources at the national level. The majority of Member States apply support schemes that grant benefits solely to energy from renewable sources that is produced on their territory. For the proper functioning of national support schemes it is vital that Member States can control the effect and costs of their national support schemes according to their different potentials. One important means to achieve the aim of this Directive is to guarantee the proper functioning of national support schemes as under the Directive 2001/77/EC in order to maintain investor confidence and in order to allow Member States to design effective national measures for target compliance. The Directive aims at facilitating cross-border support of renewable energies without affecting national support schemes. It introduces optional measures of co-operation between Member States which allow Member States to agree on the extent to which one Member State supports the energy production in another Member State and on the extent to which the energy production from renewable sources should count towards the national overall targets of either of them. In order to ensure the effectiveness of both measures of target compliance, i.e. national support schemes and co-operation mechanisms, it is essential that Member States are able to determine if and to what extent their national support schemes apply to energy from renewable sources produced in other Member States and to agree on this by applying the measures of co-operation foreseen in this Directive.

(52) When designing their support systems, Member States may encourage the use of biofuels which give additional benefits – including the benefits of diversification offered by biofuels made from wastes, residues, non-food cellulosic material, ligno-cellulosic material and algae, as well as non-irrigated plants grown in arid areas to fight desertification – by taking due account of the different costs of producing energy from traditional biofuels on the one hand and of these biofuels which give additional benefits on the other hand. Member States may encourage investment in the research and development of these and other renewable energy technologies that need time to become competitive.

(52a) Implementation of this Directive should reflect, where relevant, the provisions of the Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters, in particular as implemented through Directive 2003/4/EC.

(53) Since the measures provided for in Articles 15 to 17 of this Directive have also an effect on the functioning of the internal market by harmonising the conditions of sustainability that biofuels and other bioliquids must meet for the target accounting purposes under this Directive and thus facilitate, in accordance with article 15(6) of this Directive, the trade between Member States in biofuels and other bioliquids which comply with these conditions, they are based on Article 95 of the Treaty. Since the primary purpose of all other measures provided for in this Directive is the protection of the environment, they are based on Article 175(1) of the Treaty.

(53a) The sustainability scheme should not prevent Member States from taking into account, in their national support schemes, the higher production cost of biofuels and bioliquids that deliver benefits that exceed the minima laid down in the sustainability scheme.

(54) 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 Commission[1].

(55) In particular, power should be conferred on the Commission to adapt the methodological principles and values necessary for assessing whether sustainability criteria have been fulfilled in relation to biofuels and other bioliquids and to adapt the energy content of transport fuels to technical and scientific progress. 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 Decision 1999/468/EC.

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

(56) Those provisions of Directive 2001/77/EC and Directive 2003/30/EC that overlap with the provisions of this Directive should be deleted from the latest possible moment for its transposition. Those that deal with targets and reporting for 2010 should remain in force until the end of 2011. It is therefore necessary to amend Directive 2001/77/EC and Directive 2003/30/EC accordingly.

(57) Since the general objectives of achieving a 20% share of renewable energies in the Community's gross final energy consumption and a 10% share of energy from renewable sources in each Member State's transport energy 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. 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.

(58) In accordance with paragraph 34 of the Interinstitutional agreement on better law-making [1], Member States are encouraged to draw up, for themselves and in the interest of the Community, their own tables illustrating, as fas as possible, the correlation between this Directive and the transposition measures and to make them public.

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Scope

This Directive establishes a common framework for the promotion of energy from renewable sources. It sets mandatory national targets for the overall share of energy from renewable sources in gross final consumption of energy and for the share of energy from renewable sources in transport. It lays down rules relating to statistical transfers between Member States, joint projects between Member States and with third countries, guarantees of origin, administrative procedures, information and training and access to the electricity grid for energy from renewable sources. It establishes sustainability criteria for biofuels and other bioliquids.

[1] OJ C 321, 31.12.2003, p 1

Article 2

Definitions

For the purposes of this Directive, the definitions in Directive 2003/54/EC shall apply.

The following definitions shall also apply:

(a) "energy from renewable sources" means energy from renewable non-fossil sources: wind, solar, geothermal, aerothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;

(aa) “aerothermal energy” means energy stored in form of heat in the ambient air;

(ab) “geothermal energy” means energy stored in form of heat beneath the surface of solid earth;

(ac) “hydrothermal energy” means energy stored in form of heat in surface water;

(b) "biomass" means the biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;

(c) "gross final consumption of energy" means the energy commodities delivered for energy purposes to industry, transport , households, services including public 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 and transmission;

(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 or sites, for the use of space or process heating or cooling;

(e) "bioliquids" means liquid fuel for energy purposes, including electricity and heating and cooling, produced from biomass;

(f) "biofuels" means liquid or gaseous fuel for transport produced from biomass;

(g) “guarantee of origin” means an electronic document which has the sole function of providing proof to a final customer that a given share or quantity of energy was produced from renewable sources as required by Article 3 (6) of Directive 2003/54.

(h) “support scheme” means any instrument, scheme or mechanism applied by a Member State or a group of Member States, that promotes the use of energy from renewable sources by reducing the cost of this energy, increasing the price at which it can be sold, or increasing, by means of a renewable energy obligation or otherwise, the volume of such energy purchased; this includes, but is not restricted to, investment aid, tax exemptions or reductions, tax refunds, renewable energy obligation support schemes including those using green certificates, and direct price support schemes including feed-in tariffs and premium payments;

(i) "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. Schemes under which such requirements may be fulfilled by using green certificates are included;

(j) "actual value" means the greenhouse gas emissions saving for some or all of the steps of a specific biofuel production process calculated in accordance with the methodology laid down in Part C of Annex VII;

(k) "typical value" means an estimate of the representative greenhouse gas emissions saving for a particular biofuel production pathway;

(l) "default value" means a value derived from a typical value by the application of pre-determined factors and that may, in circumstances specified in this Directive, be used in place of an actual value.

Article 3

National overall targets and measures for the use of energy from renewable sources

1. Each Member State shall ensure that the share of energy from renewable sources, calculated in accordance with Articles 5 to 10, in gross final consumption of energy in 2020 is at least its national overall target for the share of energy from renewable sources in that year, as set out in the third column of the table in Part A of Annex I. These mandatory national targets are consistent with a target of at least a 20% share of energy from renewable sources in the Community's gross final energy consumption in 2020. In order to achieve more easily these targets laid down in this article, each Member State shall promote and encourage energy efficiency and energy saving.

2. Member States shall introduce measures effectively designed to ensure that the share of energy from renewable sources equals or exceeds that shown in the indicative trajectory set out in Part B of Annex I.

2a. In order to reach the targets set in paragraphs 1 and 2 of this Article Member States may inter alia apply the following measures:

(a) support schemes;

(b) measures of co-operation between different Member States and with third countries for achieving their national overall targets in accordance with Articles 5 to 10 of this Directive.

Without prejudice to Articles 87 and 88 of the Treaty, Member States shall have the right to decide in accordance with Articles 5 to 10 to which extent they support energies from renewable sources which are produced in a different Member State.

3. Each Member State shall ensure that the share of energy from renewable sources in all forms of transport in 2020 is at least 10% of final consumption of energy in transport in that Member State.

For the purposes of this paragraph only, the following provisions shall apply:

(a) For the calculation of the denominator, that is the total amount of energy consumed in transport for the purposes of the first subparagraph, only petrol, diesel, biofuels used in land transport and electricity shall be taken into account;

(b) For the calculation of the numerator, that is the amount of energy from renewable sources consumed in transport for the purposes of the first subparagraph, all types of renewable energy used in all forms of transport shall be taken into account;

(c) for the calculation of the contribution from electricity produced from renewable sources and consumed in all types of electric vehicles for the purpose of points (a) and (b), Member States may choose to use either the average share of renewable electricity for the EU or the share of renewable electricity in their own country as measured two years before the year in question. Furthermore, for the calculation of the renewable electricity consumed by electric road vehicles, this consumption shall be considered to be 2,5 times the energy content of the renewable electricity input.

The Commission shall present, if appropriate, by the end of 2011 a proposal permitting, subject to certain conditions, the whole amount of the electricity originating from renewable sources used to power all types of electric vehicles to be considered;

(d) The Commission shall also present, if appropriate, by the end of 2011 a proposal for a methodology for calculating the contribution of hydrogen originating from renewable sources in the total fuel mix.

Article 4

National action plans

1. Each Member State shall adopt a renewable energy action plan. The national renewable energy action plans shall set out Member States' national targets for the shares of energy from renewable sources in transport, electricity and heating and cooling in 2020, taking into account the effects of other policy measures relating to energy efficiency on final energy consumption, and adequate measures to be taken to achieve these national overall targets, including cooperation between local, regional and national authorities, planned statistical transfers or joint projects, national policies to develop existing biomass resources and mobilise new biomass resources for different uses, and the measures to be taken to fulfil the requirements of Articles 12 to 17.

   The Commission shall adopt by 30 June 2009 a template for the national action plans. This template shall comprise the minimum requirements set out in Annex VIIa. Member States shall comply with this template in the presentation of the national action plans.

2. Member States shall notify their national action plans to the Commission by 30 June 2010 at the latest.

2a. Each Member State shall publish and notify to the Commission, six months before its national action plan is due, a forecast document indicating:

   a) its estimated excess production of renewable energy compared to the indicative trajectory which could be transferred to other Member States as defined in Article 7 to 10 of this Directive, as well as the estimated potential for joint projects, until 2020;

   b) its estimated demand for renewable energy to be satisfied by means other than domestic production until 2020.

   This information may include elements relating to cost and benefits and financing. The forecast shall be updated in the reports of the Member States as set out in Article 19(1)(l) and (m).

3. A Member State whose share of energy from renewable sources fell below the indicative trajectory in the immediately preceding two-year period set out in Part B of Annex I shall submit an amended action plan to the Commission by 30 June of the following year, setting out adequate and proportionate measures to rejoin within a reasonable timetable the indicative trajectory in Part B of Annex I.

   The Commission may, if the Member State has missed its national overall target by a limited margin, and taking due account of the current and future measures taken by the Member State, adopt a decision to release the Member State of the obligation to submit an amended action plan.

4. The Commission shall evaluate the national action plans, notably the adequacy of the measures envisaged by the Member State in accordance with Article 3(2). In response to a national action plan or to an amended national action plan, the Commission may issue a recommendation.

5. The Commission shall send to the Parliament the National Action Plans and the forecast documents in the form as made public on the transparency platform as referred to in Art. 20a(2), as well as any recommendation as referred to in paragraph 4 of this Article.

Article 5

Calculation of the share of energy from renewable sources

1. The gross final consumption of energy from renewable sources in each Member State shall be calculated as the sum of:
   (a) gross final consumption of electricity from renewable energy sources;
   (b) gross final consumption of energy from renewable sources for heating and cooling; and
   (c) final energy from renewable sources consumed in transport.

   Gas, electricity and hydrogen from renewable energy sources shall only be considered once in either points 1(a), 1(b) or 1(c) for calculating the share of gross final consumption of energy from renewable sources.

Subject to the last subparagraph of Article 15(1), biofuels and other bioliquids that do not fulfil the sustainability criteria set out in Article 15(2) to (5) shall not be taken into account.

[Note: para (2) deleted]

3. Where a Member State considers that, due to force majeure, it is impossible for it to meet its share of energy from renewable sources in gross final consumption of energy in 2020 set out in the third column of the table in Annex I, it shall inform the Commission as soon as possible. The Commission shall adopt a decision on whether force majeure has been demonstrated, in which case it shall decide what adjustment shall be made to the Member State's gross final consumption of energy from renewable sources for the year 2020.

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

In multi-fuel plants using renewable and conventional sources, only the part of electricity produced from renewable energy 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 and wind power shall be accounted for in accordance with the normalisation rules set out in Annex II.

5. For the purposes of paragraph 1(b) of this Article, the gross final consumption of energy from renewable sources for heating and cooling shall be calculated as the quantity of district heating and cooling produced in a Member State from renewable sources, plus the consumption of other energy from renewable sources in industry, households, services, agriculture, forestry and fisheries for heating, cooling and process purposes.
In multi-fuel plants using renewable and conventional sources, only the part of heating and cooling produced from renewable energy 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.

Aerothermal, geothermal and hydrothermal heat energy captured by heat pumps shall be taken into account for the purposes of paragraph 1(b) of this Article provided that the final energy output significantly exceeds the primary energy input. The quantity of heat to be considered as renewable energy for the purposes of this Directive shall be calculated in accordance with the methodology laid down in Annex VII b.

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

6. 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. Such a measure designed to amend non-essential elements of this Directive shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 21(3).

7. The share of energy from renewable sources shall be calculated as the gross final consumption of energy from renewable sources divided by the gross final consumption of energy from all energy sources, expressed as a percentage.
For the purposes of the first subparagraph, the sum referred to in paragraph 1 shall be adjusted in accordance with Articles 7, 8a, 9a and 10.

In calculating a Member State's gross final energy consumption for the purpose of measuring its compliance with the targets and interim trajectory laid down in this Directive, the amount of energy consumed in aviation shall be considered to be no more, as a proportion of that Member State's gross final energy consumption, than 6,18%. For Cyprus and Malta the amount of energy consumed in aviation shall be considered to be no more, as a proportion of that Member State's gross final energy consumption, than 4,12%.

8. The methodology and definitions used in the calculation of the share of energy from renewable sources shall be those of Regulation (EC) No xx/xx on energy statistics[1]. Member States shall ensure coherence of statistical information used in calculating these sectoral and overall shares and statistical information reported to the Commission under the Energy Statistics Regulation EC No.xx/xx.

[Note: Article 6 deleted]

Article 7

Statistical transfers between Member States

1. Member States may agree on and may make arrangements for the statistical transfer of a specified amount of energy from renewable sources to be transferred from one Member State to another Member State. The transferred quantity is to be:

   (a) deducted from the amount of energy from renewable sources that is taken into account in measuring compliance by the Member State making the transfer with the requirements of Article 3(1) and 3(2); and

   (b) added to the amount of energy from renewable sources that is taken into account in measuring compliance by another Member State accepting the transfer with the requirements of Article 3(1) and 3(2).

[1] [Energy Statistics Regulation]

A statistical transfer shall not affect the achievement of the national target of the Member State making the transfer.

2. Arrangements under paragraph 1 of this Article may have effect for one or more years. They must be notified to the Commission no later than 3 months after the end of each year in which they have effect. The information sent to the Commission shall include the quantity and price of the energy involved.

3. Transfers shall become effective only after all Member States involved in the transfer have notified the transfer to the Commission.

Article 8

Joint projects between Member States

1. Two or more Member States may cooperate on all types of joint projects relating to the production of energy from renewable electricity, heating or cooling. This cooperation may involve private operators.

2. Member States shall notify the Commission of the proportion or amount of energy from renewable electricity, heating or cooling produced by any joint project in their territory, that became operational after the date of entry into force of this Directive, or by the increased capacity of an installation that was refurbished after the date of entry into force of this Directive, which is to be regarded as counting towards the national overall target of another Member State for the purposes of measuring target compliance with the requirements of this Directive.

3. The notification shall:

(a) describe the proposed installation or identify the refurbished installation;

(b) specify the proportion or amount of electricity or heating or cooling produced from the installation which is to be regarded as counting towards the national overall target of another Member State;

(c) identify the Member State in whose favour the notification is being made;

(d) specify the period, in whole calendar years, during which the electricity or heating or cooling from renewable sources produced by the installation is to be regarded as counting towards the national overall target of the other Member State.

4. The period specified under point (d) of paragraph 3 may not extend beyond 2020. The duration of a joint project may extend beyond 2020.

5. A notification made under this Article may not be varied or withdrawn without the joint agreement of the Member State making the notification and the Member State identified in accordance with point (c) of paragraph 3.

Article 8a

Effects of joint projects between Member States

1. Within 3 months of the end of each year falling within the period specified under Article 8(3)(d), the Member State having made the notification under Article 8 shall issue a letter of notification stating:

(a) the total amount of electricity or heating or cooling produced during the year from renewable energy sources by the installation which was the subject of the notification under Article 8; and

(b) the amount of electricity or heating or cooling produced during the year from renewable energy sources by that installation which is to count towards the national overall target of another Member State in accordance with the terms of the notification.

2. The Member State shall send the letter of notification to the Member State in whose favour the notification was made and to the Commission.

3. For the purposes of measuring target compliance with the requirements of this Directive concerning national overall targets, the amount of electricity or heating or cooling from renewable energy sources notified in accordance with point (b) of paragraph 1 shall:

(a) be deducted from the amount of electricity or heating or cooling from renewable sources that is taken into account, in measuring compliance by the Member State issuing the letter of notification under paragraph 1; and

(b) be added to the amount of electricity or heating or cooling from renewable sources that is taken into account, in measuring compliance by the Member State receiving the letter of notification in accordance with paragraph 2. []

Article 9

Joint projects between Member States and third countries

1. One or more Member States may cooperate with one or more third countries on all types of joint projects regarding the generation of electricity from renewable sources. This cooperation may involve private operators.

2. Electricity from renewable energy sources produced in a third country shall only be taken into account for the purposes of measuring compliance with the requirements of this Directive concerning national overall targets if the following conditions are met:

(a) the electricity is consumed in the Community. This condition is deemed to be met if:
   (i) an equivalent amount of electricity to the electricity accounted for has been firmly nominated to the allocated interconnection capacity by all responsible Transmission System Operators in the country of origin, the country of destination and, if relevant, each third country of transit;
   (ii) an equivalent amount of electricity to the electricity accounted for has been firmly registered in the schedule of balance by the responsible Transmission System Operator on the Community side of an interconnector; and

(iii) the nominated capacity and the production of electricity from renewable energy sources by the installation referred to in point (b) of paragraph 2 refer to the same period of time;

(b) the electricity is produced by a newly constructed installation that became operational after the entry into force of this Directive or by the increased capacity of an installation that was refurbished [] after the entry into force of this Directive, under a joint project as referred to in paragraph 1; and

(c) the amount of electricity produced and exported has not received support from a support scheme of a third country other than investment aid granted to the installation.

2a) Member States may apply to the Commission for account to be taken, for the purposes of Article 5, paragraph 1, of electricity from renewable sources produced and consumed in a third country, in the context of the construction of an inter-connector with a very long lead-time between a Member State and a third country under the following conditions:

(a) construction of the inter-connector must have started by 2016;
(b) it must not be possible for the inter-connector to become operational by 2020;
(c) it must be possible for the inter-connector to become operational by 2022;
(d) after it becomes operational, the inter-connector will be used for the export to the Community, in accordance with paragraph 2, of electricity generated from renewable sources;
(e) the application relates to a joint project that fulfils the criteria in points (b) and (c) of paragraph 2 and that will use the inter-connector after it becomes operational, and to a quantity of electricity that is no greater than the quantity that will be exported to the Community after the interconnector becomes operational.

3. The proportion or amount of electricity produced by any installation in the territory of a third country, which is to be regarded as counting towards the national overall target of one or more Member States for the purposes of measuring compliance with Article 3, shall be notified to the Commission. When more than one Member State is concerned, the distribution between Member States of this amount shall be notified to the Commission. This amount shall not exceed the amount actually exported to, and consumed in, the Community, corresponding to the amount referred to in paragraph 2(a)(i) and (ii) of this Article and meeting the conditions as set out in paragraph (2)(a). The notification shall be made by each Member State towards whose overall national target the proportion or amount of electricity is to count.

4. The notification shall:
   (a) describe the proposed installation or identify the refurbished installation;
   (b) specify the proportion or amount of electricity produced from the installation which is to be regarded as counting towards the national target of a Member State as well as, subject to confidentiality requirements, the corresponding financial arrangements;
   (c) specify the period, in whole calendar years, during which the electricity is to be regarded as counting towards the national overall target of the Member State;
   (d) include a written acknowledgement by the third country in whose territory the installation is to become operational of points (b) and (c) and the proportion or amount of electricity produced from the installation which will be used domestically.

5. The period specified under point (c) of paragraph 4 may not extend beyond 2020. The duration of a joint project may extend beyond 2020.

6. A notification made under this Article may not be varied or withdrawn without the joint agreement of the Member State making the notification and the third country which has acknowledged the joint project in accordance with point (d) of paragraph 4.

7. Member States and the Community shall encourage the relevant bodies of the Energy Community Treaty to take, in conformity with the Energy Community Treaty, the measures which are necessary so that the Contracting Parties to that Treaty can apply the provisions on cooperation foreseen in the present Directive between Member States.

Article 9a

Effects of joint projects between Member States and third countries

1. Within 3 months of the end of each year falling within the period specified under Article 9(4)(c), the Member State having made the notification under Article 9 shall issue a letter of notification stating:

   (a) the total amount of electricity produced during that year from renewable energy sources by the installation which was the subject of the notification under Article 9;

   (b) the amount of electricity produced during the year from renewable energy sources by that installation which is to count towards its national overall target in accordance with the terms of the notification; and

   (c) proof of compliance with the conditions set in Article 9(2).

2. The Member State shall send the letter of notification to the third country which has acknowledged the project in accordance with Article 9(3)(d) and to the Commission.

3. For the purposes of measuring target compliance with the requirements of this Directive concerning national overall targets, the amount of electricity from renewable energy sources notified in accordance with point (b) of paragraph 1 shall be added to the amount of energy from renewable sources that is taken into account, in measuring compliance by the Member State issuing the letter of notification.

Article 10

Joint support schemes

1. Without prejudice to the obligations of Member States under Article 3, two or more Member States may decide, on a voluntary basis, to join or partly coordinate their national support schemes. In such cases, a certain amount of energy from renewable sources produced in the territory of one participating Member State may count towards the national overall target of another participating Member State if the Member States concerned:

(a) make a statistical transfer of specified amounts of energy from renewable sources from one Member State to another Member State in accordance with Article 7, or

(b) set up a distribution rule agreed by participating Member States that allocates amounts of energy from renewable sources between the participating Member States. Such a rule shall be notified to the Commission no later than three months after the end of the first year in which it takes effect.

2. Within 3 months of the end of each year each Member State having made a notification under Article 10(1)b shall issue a letter of notification stating the total amount of electricity or heating or cooling from renewable energy sources produced during the year which is to be the subject of the distribution rule.

3. For the purposes of measuring compliance with the requirements of this Directive concerning national overall targets, the amount of electricity or heating or cooling from renewable energy sources notified in accordance with paragraph 2 shall be reallocated between the concerned Member States in accordance with the notified distribution rule.

Article 11

Capacity increases

For the purpose of Article 8(2) and 9(2)(b), units of renewable energy imputable to an increase in the capacity of an installation shall be treated as if they were produced by a separate installation becoming operational at the moment at which the increase of capacity occurred.

Article 12

Administrative procedures, regulations and codes

1. Member States shall ensure that any national rules concerning the authorisation, certification and licensing procedures that are applied to plants and associated transmission and distribution network infrastructures 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, take the appropriate steps to ensure that:

(a) subject to differences between Member States in their administrative structures and organisation, the respective responsibilities of national, regional and local administrative bodies for authorisation, certification and licensing procedures including spatial planning are clearly coordinated and defined, with transparent timetables for determining planning and building applications;

(aa) comprehensive information on the processing of authorisation, certification and licensing applications for renewable energy installations and on available assistance to applicants shall be made available at the appropriate level;

(b) administrative procedures are streamlined and expedited at the appropriate administrative level;

(c) rules governing authorisation, certification and licensing are objective, transparent, proportionate, do not discriminate between applicants and take fully into account the particularities of individual renewable energy technologies;

(d) administrative charges paid by consumers, planners, architects, builders and equipment and system installers and suppliers are transparent and cost-related; and

(e) less burdensome and simplified authorisation procedures, including through simple notification if allowed by the applicable regulatory framework, are established for smaller projects and for decentralised renewable devices, where appropriate.

2. 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, such technical specifications shall be expressed in terms of those standards. Such technical specifications shall not prescribe where the equipment and systems are to be certified and should not constitute a barrier to the operation of the internal market.

3. Member States shall recommend to all actors, in particular local and regional administrative bodies to ensure equipment and systems are installed 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. Member States shall, in particular, encourage local and regional administrative bodies to include heating and cooling from renewable energy sources in the planning of city infrastructure, where appropriate.

4. Member States shall introduce in their building regulations and codes appropriate measures in order to increase the share of all kinds of energy from renewable sources in the building sector.

In establishing these building regulations and codes, or in the regional support scheme, Member States may take into account national measures relating to substantial increases in energy efficiency and relating to cogeneration, to passive, low or zero energy buildings.

In these building regulations and codes or any way with equivalent effect, Member States shall by 2015 at the latest, where appropriate, require the use, of minimum levels of energy from renewable sources in new buildings and in existing buildings that are subject to major renovation. Member States shall permit these minimum levels to be fulfilled inter alia through district heating and cooling produced using a significant share of renewable energy sources.

The requirements of the first subparagraph shall apply to the armed forces, only to the extent that its application does not cause any conflict with the nature and primary aim of the activities of the armed forces and with the exception of material used exclusively for military purposes.

4a. Member States shall ensure that new public buildings, and existing public buildings that are subject to major renovation, at national, regional and local level fulfil an exemplary role in the context of this Directive from 2012 onwards. Member States may inter alia allow that this obligation is fulfilled by complying with standards for zero energy housing, or by providing that the roofs of public or mixed private-public buildings are used by third parties for installations that produce renewable energies.

5. With respect to their building regulations and codes, Member States shall promote the use of renewable energy heating and cooling 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 encouraging such systems and equipment.

In the case of biomass, Member States shall promote 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 promote heat pumps which fulfil the minimum requirements of eco-labelling established in Decision 2007/742/EC.

In the case of solar thermal energy, Member States shall promote certified equipment and systems based on European standards where these exist, including eco-labels, energy labels and other technical reference systems established by the European standardisation bodies.

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.

Article 13

Information and training

1. Member States shall ensure that information on support measures is made available to all relevant actors, such as consumers, builders, installers, architects, and suppliers of heating, cooling and electricity equipment and systems and of vehicles compatible with the use of renewable energies.

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. Member States shall ensure that certification schemes or equivalent qualification schemes become or are available by 31 December 2012 for installers of small-scale biomass boilers and stoves, solar photovoltaic and solar thermal systems, shallow geothermal systems and heat pumps. Those schemes or equivalent qualification systems may take into account existing schemes and structures as appropriate, and shall be based on the criteria laid down in Annex IV. Each Member State shall recognise certification awarded by other Member States in accordance with these criteria.

3a. Member States shall make available to the public information on certification schemes or equivalent qualification schemes as referred to in paragraph 3. Member States may also make available the list of installers who are qualified or certified in accordance with the provisions referred to in paragraph 3.

4. Member States shall ensure that guidance is made available to all relevant actors, notably for planners and architects so that they are able properly to consider the optimal combination of renewable energy sources, of high-efficiency technologies and of district heating and cooling when planning, designing, building and renovating industrial or residential areas.

4a. Member States, with participation from local and regional authorities, shall develop suitable information, awareness-raising, guidance and/or training programmes in order to inform citizens of the benefits and practicalities of developing and using energy from renewable sources.

Article 13a

Guarantees of origin of electricity, heating and cooling produced from renewable energy sources

1. For the purposes of proving to final customers the share or quantity of renewable energy in an energy supplier's energy mix, according to Article 3(6) of Directive 2003/54/EC, Member States shall ensure that the origin of electricity produced from renewable energy sources can be guaranteed as such within the meaning of this Directive, according to objective, transparent and non-discriminatory criteria.

1a. To that end, Member States shall ensure that a guarantee of origin is issued in response to a request from a producer of electricity from renewable energy sources. Member States may arrange for guarantees for origin to be issued in response to a request from producers of heating and cooling from renewable energy sources. Such an arrangement may be made subject to a minimum capacity limit. A guarantee of origin shall be of the standard size of 1 MWh. No more than one guarantee of origin shall be issued in respect of each unit of energy produced.

Member States shall ensure that the same unit of energy from renewable sources is taken into account only once.

A Member State may provide that no support be granted to a producer when this producer receives a guarantee of origin for the same production of energy from renewable sources.

The guarantee of origin shall have no function in terms of a Member State's compliance with Article 3 of this Directive. Transfers of guarantees of origin, separately or together with the physical transfer of energy, shall have no effect on the decision of Member States to use statistical transfers, joint projects or joint support schemes for target compliance or on the calculation of the gross final consumption of energy produced from renewable sources calculated in accordance with Article 5.

1b. A guarantee of origin may only be used within twelve months of the production of the corresponding energy unit. It shall be cancelled upon its use.

1c. Member States or designated competent bodies shall supervise the issuance, transfer and cancellation of such guarantees of origin. The designated competent bodies shall have non-overlapping geographical responsibilities, and be independent of generation, trade and supply activities.

2. Member States or the competent bodies shall put in place appropriate mechanisms to ensure that guarantees of origin shall be issued, transferred and cancelled electronically and are accurate, reliable and fraud-resistant.

2a. 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) heating and/or cooling;

(c) the identity, location, type and capacity of the installation where the energy was produced;

(d) whether and to what extent the installation has benefited from investment support, whether and to what extent the unit of energy has benefited in any other way from a national support scheme, and the type of support scheme;

(e) the date of the installation's becoming operational;

(f) the date and country of issue and a unique identification number.

2b. Where an electricity supplier is required to prove the share or quantity of renewable energy in its energy mix for the purposes of Article 3(6) of Directive 2003/54/EC, it may do so by using its guarantees of origin.

2c. The amount of renewable energy corresponding to guarantees of origin transferred by an energy supplier to a third party shall be deducted from the share of energy from renewable sources in its energy mix for the purposes of Article 3(6) of Directive 2003/54/EC.

3. Member States shall recognise guarantees of origin issued by other Member States in accordance with this Directive, exclusively as proof of the elements referred to in paragraph 1 and 2a, (a)-(f). A Member State may only refuse to recognise a guarantee of origin when it has well-founded doubts about its accuracy, reliability or veracity. The Member State shall notify the Commission of such a refusal and its justification.

3a. If the Commission finds that a refusal to recognise a guarantee of origin is unfounded, the Commission may adopt a Decision requiring the Member State in question to recognise it.

3b. A Member State may introduce, in conformity with Community law, objective, transparent and non-discriminatory criteria for the use of guarantees of origin in complying with obligations under Article 3(6) of Directive 2003/54/EC.

4. Where energy suppliers are marketing energy from renewable sources to consumers with a reference to environmental or other benefits of renewable energy, Member States may require the energy suppliers to make available, in summary form, information on the amount or share of energy from renewable sources that comes from installations or increased capacity that became operational after the date of entry into force of this Directive.

Article 14

Access to and operation of the grids

1. Member States shall take the appropriate steps to develop transmission and distribution grid infrastructure, intelligent networks, storage facilities and the electricity system, in order to allow the secure operation of the electricity system as it accommodates the further development of electricity production from renewable energy sources, including interconnection between Member States, as well as third countries. Member States shall also take appropriate steps to accelerate authorisation procedures for grid infrastructure and to coordinate approval of grid infrastructure with administrative and planning procedures.

2. Subject to requirements relating to the maintenance of the reliability and safety of the grid, based on transparent and non-discriminatory criteria defined by the competent national authorities:

(a) 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;

(b) Member States shall also provide for either priority access or guaranteed access to the grid-system of electricity produced from renewable energy sources;

(c) Member States shall ensure that when dispatching electricity generating installations, transmission system operators shall give priority to generating installations using renewable energy sources insofar as the secure operation of the national electricity system permits and based on transparent and non-discriminatory criteria. Member States shall ensure that appropriate grid and market related operational measures are taken in order to minimise the curtailment of electricity produced from renewable energy sources. If significant measures are taken to curtail the renewable energy sources in order to guarantee the security of the national electricity system and security of supply, Members States shall ensure that the responsible system operators report to the competent regulatory authority on these measures and indicate which corrective measures they intend to take in order to prevent inappropriate curtailments.

3. Member States shall require transmission system operators and distribution system operators to set up and make public their standard rules relating to the bearing and sharing of costs of technical adaptations, such as grid connections and grid reinforcements, improved operation of the grid and rules on the non-discriminatory implementation of the grid codes, which are necessary in order to integrate new producers feeding electricity produced from renewable energy 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 and of the particular circumstances of producers located in peripheral regions and in regions of low population density. 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 the comprehensive and necessary information required, including:

   (a) a comprehensive and detailed estimate of the costs associated with the connection;

   (b) a reasonable and precise timetable for receipt and processing the request for grid connection;

   (c) a reasonable approximative timetable for any proposed grid 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 tariffs 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 in regions of low population density. Member States shall ensure that the charging of transmission and distribution tariffs does not discriminate against gas from renewable energy sources.

8. Member States shall ensure that tariffs charged by transmission system operators and distribution system operators for the transmission and distribution of electricity from plants using renewable energy 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.

9. Where relevant, Member States shall assess the need to extend existing gas network infrastructure to facilitate the integration of gas from renewable sources.

10. Where relevant, Member States shall require transmission system operators and distribution system operators in their territory to publish technical rules in line with Article 6 of Directive 2003/55, in particular regarding network connection rules that include gas quality, gas odoration and gas pressure requirements. Member States shall also require transmission and distribution system operators to publish the connection tariffs to connect renewable gas sources based on transparent and non-discriminatory standards.

11. Member States in their national action plans shall assess the necessity to build new district infrastructure for heating and cooling produced from renewable energy sources in order to achieve the 2020 national target. Subject to this assessment, Member States shall, where relevant, take steps with a view to developing a district heating infrastructure to accommodate the development of central heating and cooling production from large biomass, solar and geothermal facilities.

Art. 15

Sustainability criteria for biofuels and other bioliquids

1. Irrespective of whether the raw materials were cultivated inside or outside the territory of the Community, energy from biofuels and other bioliquids shall be taken into account for the purposes listed under points (a), (b) and (c) only if they fulfil the sustainability 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 and other bioliquids.

However, biofuels and bioliquids produced from waste and residues, other than agricultural, aquaculture, fisheries and forestry residues, need only fulfil the sustainability criterion set out in paragraph 2 in order to be taken into account for the purposes listed under points (a), (b) and (c).

2. The greenhouse gas emission saving from the use of biofuels and other bioliquids taken into account for the purposes referred to in paragraph 1 of this Article shall be 35%.

With effect from 2017, the greenhouse gas emission saving from the use of biofuels and other bioliquids taken into account for the purposes referred to in paragraph 1 of this Article shall be 50%. After 2017 it shall be 60 % for biofuels and bioliquids produced in installations whose production has started from 2017 onwards.

The greenhouse gas emission saving from the use of biofuels and other bioliquids shall be calculated as provided for in Article 17(1).

In the case of biofuels and other bioliquids produced by installations that were in operation in January 2008, the first subparagraph shall apply from 1 April 2013.

3. Biofuels and other bioliquids taken into account for the purposes referred to in paragraph 1 of this Article shall not be made from raw material obtained from land with high biodiversity value, that is to say land that had one of the following statuses in or after January 2008, whether or not the land still has this status:

(a) primary forest and other wooded land, that is to say forest and other wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed;

(b) (i) areas designated by law or by the relevant competent authority for nature protection purposes; or

(ii) areas for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition in accordance with the second subparagraph of Article 16(4);

unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;

(c) (i) highly biodiverse natural grassland, that is to say grassland that would remain grassland in the absence of human intervention and which maintains the natural species composition and ecological characteristics and processes; or

(ii) highly biodiverse non natural grassland, that is to say grassland that would cease to be grassland in the absence of human intervention and which is species-rich and not degraded, unless evidence is provided that the harvesting of the raw material is necessary to preserve its grassland status.

The Commission shall establish the criteria and geographic ranges to determine which grassland shall be covered by point (c) of the first subparagraph. Such a measure designed to amend non-essential elements of this Directive, by supplementing it shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 21(3).

4. Biofuels and other bioliquids taken into account for the purposes referred to in paragraph 1 shall not be made from raw material obtained from land with high carbon stock, that is to say land that had one of the following statuses in January 2008 and no longer has this status:

(a) wetlands, that is to say land that is covered with or saturated by water permanently or for a significant part of the year;

(b) continuously forested areas, 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;

(ba) Land spanning more than 1 hectare with trees higher than 5 metres and a canopy cover of between 10% and 30%, or trees able to reach these thresholds in situ, unless reliable evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in Annex VII.C is applied, the conditions laid down in 15(2) would be fulfilled.

The provisions in this paragraph shall not apply if at the time the raw material was obtained, the land had the same status as it had in January 2008.

4a. Biofuels and other bioliquids taken into account for the purposes referred to in paragraph 1 shall not be made from raw material obtained from land that was peatland in January 2008, unless it is proven that the cultivation and harvesting of this raw material does not involve drainage of previously undrained soil.

5. Agricultural raw materials cultivated in the Community and used for the production of biofuels and other bioliquids taken into account for the purposes referred to in paragraph 1 of this Article shall be obtained in accordance with the requirements and standards under the provisions referred to under the heading "Environment" in Part A of Annex III to Council Regulation (EC) No 1782/2003 and in point 9 of Annex III to that Regulation and in accordance with the minimum requirements for good agricultural and environmental condition defined pursuant to Article 5(1) of that Regulation.

5a. The Commission shall report every two years to the European Parliament and the Council, in respect both of third countries and Member States that are a significant source of biofuels or of raw material for biofuels consumed within the Community, on national measures taken to respect the sustainability criteria set out in Article 15(2) to (4) and for soil, water and air protection. The first report shall be submitted in 2012.

The Commission shall report every two years to the European Parliament and the Council on the impact on social sustainability in the Community and in third countries of increased demand for biofuel, and on the impact of EU biofuel policy on the availability of foodstuffs at affordable prices, in particular for people living in developing countries, and wider development issues. Reports shall address the respect of land use rights. They shall state, both for third countries and Member States that are a significant source of raw material for biofuel consumed within the Community, whether the country has ratified and implemented each of the following Conventions of the International Labour Organisation:

- Convention concerning Forced or Compulsory Labour (No 29);
- Convention concerning Freedom of Association and Protection of the Right to Organise (No 87);
- Convention concerning the Application of the Principles of the Right to Organise and to Bargain Collectively (No 98);
- Convention concerning Equal Remuneration of Men and Women Workers for Work of Equal Value (No 100);
- Convention concerning the Abolition of Forced Labour (No 105);
- Convention concerning Discrimination in Respect of Employment and Occupation (No 111);
- Convention concerning Minimum Age for Admission to Employment (No 138);
- Convention concerning the Prohibition and Immediate Action for the Elimination of the Worst Forms of Child Labour (No 182).

Those reports shall state, both for third countries and Member States that are a significant source of raw material for biofuel consumed within the Community, whether the country has ratified and implemented:

- the Carthagena protocol on biosafety;
- the Convention on International Trade in Endangered Species of Wild Fauna and Flora.

The first report shall be submitted in 2012. The Commission shall, if appropriate, propose corrective action, in particular if evidence shows that biofuel production has a significant impact on food prices.

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

7. The Commission shall report on requirements for a sustainability scheme for energy uses of biomass, other than biofuels and bioliquids, by 31 December 2009 at the latest. The report shall be accompanied, where appropriate, by proposals for a sustainability scheme for other energy uses of biomass, to the European Parliament and the Council. This report and proposals shall be based on the best available scientific evidence, taking into account new developments in innovative processes. If the analysis done for this purpose demonstrates that it would be appropriate to introduce amendments, in relation to forest biomass, in the calculation methodology in Annex VII or in the sustainability criteria relating to carbon stocks applied to biofuels and other bioliquids, the Commission shall, where appropriate, introduce proposals at the same time in this regard.

Article 16

Verification of compliance with the sustainability criteria for biofuels and other bioliquids

1. Where biofuels and other bioliquids are to be taken into account for the purposes referred to in Article 15(1), Member States shall require economic operators to show that the sustainability criteria set out in Article 15(2) to (4a) have been fulfilled. For this purpose they shall require economic operators to use a mass balance system providing for the following:
   (a) consignments of raw material or biofuel with differing sustainability characteristics can be mixed;
   (b) information about the sustainability characteristics and sizes of the consignments referred to in point (a) 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 quantities, as the sum of all consignments added to the mixture.

2. The Commission shall report to the European Parliament and the Council in 2010 and 2012 on the operation of the mass balance verification method described in paragraph 1 and on the potential to allow for other verification methods in relation to some or all types of raw material, biofuel or other bioliquids. In its assessment the Commission shall consider those verification methods in which information about sustainability characteristics need not remain physically assigned to particular consignments or mixtures. The assessment shall take into account the need to maintain the integrity and effectiveness of the verification system while avoiding imposing an unreasonable burden on industry. The report shall be accompanied, where appropriate, by proposals on allowing other verification methods, to the European Parliament and the Council.

3. Member States shall take measures to ensure that economic operators submit reliable information and to make available to the Member State, on request, the data that were used to develop the information. Member States shall require economic operators 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 economic operators are accurate, reliable and fraud-resistant. It shall evaluate the frequency and methodology of sampling and the robustness of the data.

The information referred to in the first subparagraph of this paragraph shall include in particular information on compliance with the sustainability criteria set out in Article 15(2) to (4a), appropriate and relevant information on measures taken for soil, water and air protection, the restoration of degraded land, the avoidance of excessive water consumption in areas where water is scarce and appropriate and relevant information concerning measures taken in order to take into account the issues referred to in the second subparagraph of Article 15(5a).

The Commission shall establish the list of appropriate and relevant information referred to in the first two subparagraphs of this paragraph that Member States shall request from economic operators, in accordance with the advisory procedure referred to in Article 21(2). It shall ensure, in particular, that the provision of that information does not represent an excessive administrative burden for operators in general or for smallholder farmers, producer organisations and cooperatives in particular.

The obligations laid down in this paragraph shall apply whether the biofuels or bioliquids are produced within the Community or imported.

Member States shall submit, in aggregated form, the information referred to in the first subparagraph of this paragraph to the Commission, which shall publish this information on the transparency platform referred to in Article 20a in summary form preserving the confidentiality of commercially sensitive information.

4. The Community shall endeavour to conclude bilateral or multilateral agreements with third countries containing provisions on sustainability criteria that correspond to those of this directive. Where the Community has concluded agreements containing provisions that cover the topics covered by the sustainability criteria set out in Article 15(2) to (4a), the Commission may decide that those agreements demonstrate that biofuels and other bioliquids produced from raw materials cultivated in those countries comply with the sustainability criteria in question. When those agreements are concluded, due consideration shall be given to measures taken for the conservation of areas that provide basic ecosystem services in critical situations (such as watershed protection and erosion control), for soil, water and air protection, indirect land-use changes, the restoration of degraded land, the avoidance of excessive water consumption in areas where water is scarce and to the issues referred to in the second subparagraph of Article 15(5a).

The Commission may decide that voluntary national or international schemes setting standards for the production of biomass products contain accurate data for the purposes of Article 15(2) or demonstrate that consignments of biofuel comply with the sustainability criteria set out in Article 15(3) to (4a). The Commission may decide that those schemes contain accurate data for the purposes of information on measures taken for the conservation of areas that provide basic ecosystem services in critical situations (such as watershed protection and erosion control), for soil, water and air protection, the restoration of degraded land, the avoidance of excessive water consumption in areas where water is scarce and to the issues mentioned in the second subparagraph of Article 15(5a). The Commission may also recognise areas for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature for the purposes of Article 15(3)(b)(ii).

The Commission may decide that national, multinational or international schemes to measure greenhouse gas savings contain accurate data for the purposes of Article 15(2).
The Commission may decide that land that falls within the scope of a national or regional recovery programme aimed at improving severely degraded or heavily contaminated land fulfils the categories laid down in point 7b of Part C of Annex VII.

5. The Commission shall only adopt decisions pursuant to paragraph 4 of this Article 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, such schemes shall also comply with the methodological requirements in Annex VII. In the case areas of high biodiversity value as referred to in Article 15(3)(b)(ii), lists of such areas shall meet adequate standards of objectivity and coherence with internationally-recognised standards and provide for appropriate appeal procedures.

6. Decisions pursuant to paragraph 4 shall be adopted in accordance with the procedure referred to in Article 21(2). Such decisions shall be valid for a period of no more than 5 years.

7. When an economic operator proffers proof or data obtained in accordance with an agreement or scheme that has been the subject of a decision pursuant to paragraph 4 of this Article, a Member State shall not require the supplier to provide further evidence of compliance with the sustainability criteria set out in Article 15(2) to (4a) nor information on measures referred to in the second subparagraph of paragraph 3 of this Article.

8. At the request of a Member State or on its own initiative the Commission shall examine the application of Article 15 in relation to a source of biofuel or other bioliquid and, within six months of receipt of a request and in accordance with the procedure referred to in Article 21(2), decide whether the Member State concerned may take biofuel or bioliquid from that source into account for the purposes listed in Article 15(1).

9. At the latest in 2012, the Commission shall report to the European Parliament and to the Council on:

(a) the effectiveness of the system in place for the provision of information on sustainability criteria; and

(b) whether it is feasible and appropriate to introduce mandatory requirements in relation to air, soil or water protection, taking into account the latest scientific evidence and the Community's international obligations.

The Commission shall, if appropriate, propose corrective action.

Article 17

Calculation of the greenhouse gas impact of biofuels and other bioliquids

1. The greenhouse gas emission saving from the use of biofuel and other bioliquids for the purposes of Article 15(2) shall be calculated as follows:

(a) for biofuels, where a default value for greenhouse gas emission savings for the biofuel production pathway is laid down in Part A or B of Annex VII and where the e_l value for those biofuels calculated in accordance with point 7 of Part C of Annex VII is equal to or less than zero, by using that default value; or

(b) by using an actual value calculated in accordance with the methodology laid down in Part C of Annex VII; or

(c) by using a value calculated as the sum of the factors of the formula referred to in point 1 of Part C of Annex VII, where disaggregated default values in Part D or E of Annex VII may be used for some factors, and actual values, calculated in accordance with the methodology laid down in Part C of Annex VII, for all other factors.

2. By 31 March 2010 at the latest, Member States shall submit to the Commission a report including a list of those areas on their territory classified as level 2 in the nomenclature of territorial units for statistics (hereinafter referred to as "NUTS") or as a more disaggregated NUTS level in accordance with Regulation (EC) No 1059/2003 of the European Parliament and of the Council of 26 May 2003 on the establishment of a common classification of territorial units for statistics (NUTS)* where the typical greenhouse gas emissions from cultivation of agricultural raw materials can be expected to be lower than or equal to the emissions reported under the heading "cultivation" in part D of Annex VII to this Directive, accompanied by a description of the method and data used to establish that list. That method shall take into account soil characteristics, climate and expected raw material yields.

3. The default values in Part A of Annex VII for biofuels, and the disaggregated default values for cultivation in Part D of Annex VII for biofuels and other bioliquids, may be used only when their raw materials are:

(a) cultivated outside the Community; or

(b) cultivated in the Community in areas included in the lists referred to in paragraph 2 of this Article; or

(c) waste or residues other than agricultural, aquaculture and fisheries residues.

For biofuels and other bioliquids not falling under points (a), (b) or (c), actual values for cultivation shall be used.

3a. By 31 March 2010 at the latest, the Commission shall submit a report to the European Parliament and to the Council on the feasibility of drawing up lists of areas in third countries where the typical greenhouse gas emissions from cultivation of agricultural raw materials can be expected to be lower than or equal to the emissions reported under the heading "cultivation" in part D of Annex VII, accompanied if possible by such lists and a description of the method and data used to establish them. The Commission shall, if appropriate, accompany its report by relevant proposals.

* OJ L 154, 21.6.2003, p. 1.

4. The Commission shall report by 31 December 2012 at the latest, and every 2 years thereafter, on the estimated typical and default values in Parts B and E of Annex VII, paying special attention to emissions from transport and processing, and may, where necessary, decide to correct the values. Such a measure designed to amend non-essential elements of this Directive shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 21(3).

4a. The Commission shall, by 31 December 2010, submit a report to the European Parliament and to the Council reviewing the impact of indirect land use change on greenhouse gas emissions and addressing ways to minimise this impact. This report shall where appropriate be accompanied, in particular by a proposal, based on the best available scientific evidence, containing a concrete methodology for emissions from carbon stock changes caused by indirect land use changes, ensuring compliance with this Directive, in particular Article 15(2).

The proposal shall include the necessary safeguards to provide certainty for investment, undertaken before this methodology is applied. With respect to installations that produced biofuels before the end of 2013, the application of the measures referred to in the first subparagraph shall not, until the end of 2017, lead to biofuels produced by these installations being deemed not to comply with the sustainability requirements of this Directive if they would otherwise have done so, provided that those biofuels achieve a greenhouse gas saving of at least 45%. This shall apply to the capacities of the installations of biofuels at the end of 2012.

The European Parliament and the Council shall endeavour to decide in 2012 at the latest on any such proposals submitted by the Commission.

5. Annex VII may be adapted to technical and scientific progress, including by the addition of values for further biofuel production pathways for the same or for other raw materials and by modifying the methodology laid down in Part C. Such a measure designed to amend or supplement non-essential elements of this Directive inter alia by supplementing it, shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 21(3).

Regarding the default values and methodology laid down in Annex VII, particular consideration shall be paid to:

- the method of accounting for wastes and residues;
- the method of accounting for co-products;
- the method of accounting for co-generation; and
- the status given to agricultural crop residues as co-products.

The default values for waste vegetable or animal oil biodiesel shall be reviewed as soon as possible.

Any adaptation of or addition to the list of default values in Annex VII shall respect the following rules:

(a) where the contribution of a factor to overall emissions is small, or where there is limited variation, or where the cost or difficulty of establishing actual values is high, default values shall be typical of normal production processes;

(b) in all other cases default values shall be conservative compared to normal production processes.

6. Detailed definitions, including technical specifications required for the categories set out in point 7b of Part C of Annex VII shall be established. Such a measure designed to amend non-essential elements of this Directive, by supplementing it shall be adopted in accordance with the regulatory procedure with scrutiny referred to in Article 21(3).

Article 17a

Implementing measures

Implementing measures referred to in Article 15 (3) second subparagraph, Article 16 (3) third subparagraph, Article 16(6), Article 16(8), Article 17(4), Article 17(5) first subparagraph and Article 17(6) of this Directive shall also take full account of the purposes of Article 7a of Directive 98/70/EC.

Article 18

Specific provisions related to biofuels

1. Member States shall ensure that information is given to the public on the availability and environmental benefits of all different sources of renewable energy for transport. When the percentages of biofuels, blended in mineral oil derivatives, exceed 10% by volume, Member States shall require this to be indicated at the sales points.

[Note: para (2) and (3) deleted]

4. For the purposes of demonstrating compliance with national renewable energy obligations placed on operators and the target for the use of energy from renewable sources in all forms of transport referred to in Article 3(3), the contribution made by biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material shall be considered to be twice that made by other biofuels.

Article 19

Reporting by the Member States

1. Each Member State shall submit a report to the Commission on progress in the promotion and use of energy from renewable sources by 31 December 2011 at the latest, and every 2 years thereafter. The sixth report, to be submitted by 31 December 2021 at the latest, shall be the last report required.

   The report shall detail in particular:

(a) the sectoral (electricity, heating and cooling, and transport) and overall shares of energy from renewable sources in the preceding two calendar years and the measures taken or planned at national level to promote the growth of renewable energy taking into account the indicative trajectory in Part B of Annex I, in accordance with Articl 5;

(b) the introduction and functioning of support schemes 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, and information on how supported energy is allocated to final customers of energy for purposes of Article 3(6) of Directive 2003/54/EC;

(c) how, where applicable, the Member State has structured its support schemes to take into account renewable energy applications that give additional benefits in relation to other, comparable applications, but may also have higher costs, including biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material;

(d) the functioning of the system of guarantees of origin for electricity and heating and cooling from renewable energy sources and the measures taken to ensure the reliability and protection against fraud of the system;

(e) progress made in evaluating and improving administrative procedures to remove regulatory and non-regulatory barriers to the development of energy from renewable sources;

(f) measures taken to ensure the transmission and distribution of electricity produced from renewable energy sources, and to improve the framework or rules for bearing and sharing of costs referred to in Article 14(3);

(g) developments in the availability and use of biomass resources for energy purposes;

(h) commodity price and land use changes within the Member State associated with its increased use of biomass and other forms of energy from renewable sources;

(i) the development and share of biofuels made from wastes, residues, non-food cellulosic material, and ligno-cellulosic material;

(j) the estimated impact of the production of biofuels and other bioliquids on biodiversity, water resources, water quality and soil quality within their territory;

(k) the estimated net greenhouse gas savings due to the use of energy from renewable sources;

(l) its estimated excess production of renewable energy compared to the indicative trajectory which could be transferred to other Member States, as well as the estimated potential for joint projects, until 2020;

(m) its estimated demand for renewable energy to be satisfied by means other than domestic production until 2020; and

(n) information on how the share of biodegradable waste in waste used for producing energy has been estimated, and what steps have been taken to improve and verify such estimates.

2. In estimating net greenhouse gas savings from the use of biofuels, the Member State may, for the purpose of the reports referred to in paragraph 1, use the typical values given in part A and part B of Annex VII.

3. In its first report, the Member State shall outline whether it intends 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.

4. In each report the Member State shall have the possibility to correct the data of the previous reports.

Article 20

Monitoring and reporting by the Commission

1. The Commission shall monitor the origin of biofuels and other bioliquids consumed in the Community and the impacts of their production, including impacts as a result of displacement, on land use in the Community and the main third countries of supply. Monitoring shall be based on Member States' reports, submitted pursuant to Article 19(1) and those of relevant third countries, intergovernmental organisations, scientific studies and any other relevant pieces of information. The Commission shall also monitor the commodity price changes associated with the use of biomass for energy and any associated positive and negative effects on food security. The Commission shall monitor all installations to which Article 17(4a) applies.

2. The Commission shall maintain a dialogue and exchange information with third countries and biofuel producer, consumer organisations and civil society concerning the general implementation of the measures in this Directive relating to biofuels and other bioliquids. It shall, within this framework, pay particular attention to the impact biofuel production may have on food prices.

3. On the basis of the reports submitted by Member States pursuant to Article 19(1) and the monitoring and analysis referred to in paragraph 1 of this Article, the Commission shall report every two years to the European Parliament and the Council. The first report shall be submitted in 2012.

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

5. In its reports, the Commission shall in particular analyse:
   (a) the relative environmental benefits and costs of different biofuels, the effects of the Community's import policies thereon, the security of supply implications and the ways of achieving a balanced approach between domestic production and imports;

(b) the impact of increased demand for biofuel on sustainability in the Community and in third countries, considering economic and environmental impacts, including impacts on biodiversity;

(c) the scope for identifying, in a scientifically objective manner, geographical areas of high biodiversity value that are not covered in Article 15(3);

(d) the impact of increased demand for biomass on biomass using sectors;

(e) the availability of biofuels made from wastes, residues, non-food cellulosic material and ligno-cellulosic material; and

(f) indirect land use changes in relation to all production pathways.

It shall, if appropriate, propose corrective action.

5a. On the basis of the reports submitted by Member States pursuant to Article 19(3), the Commission shall analyse the effectiveness of measures taken by Member States on establishing a single administrative body responsible for processing authorisation, certification and licensing applications and providing assistance to applicants.

5b. In order to improve financing and coordination with a view to the achievement of the 20 % target, the Commission shall, by 31 December 2010, present an analysis and action plan on energy from renewable sources aimed, in particular, at the:

(a) better use of structural funds and framework programmes;

(b) better and increased use of funds from the European Investment Bank and other public finance institutions;

(c) better access to risk capital notably by analysing the feasibility of a risk sharing facility for investments in energy from renewable sources in the European Union similar to the Global Energy Efficiency and Renewable Energy Fund initiative which is aimed at third countries;

(d) better coordination of Community and national funding and other forms of support; and

(e) better coordination in support of renewable energy initiatives whose success depends on action by actors in several Member States.

6. At the latest in 2014, the Commission shall present a report, addressing in particular the following elements:

(a) a review of the minimum greenhouse gas emission saving thresholds to apply from the date referred to in the second subparagraph of Article 15(2), on the basis of an impact assessment taking into account in particular technological developments, available technologies and the availability of first and second generation bio-fuels with a high level of greenhouse gas savings;

(b) with respect to the target referred to in Article 3(3), a review of:

i. the cost-efficiency of the measures to be implemented to achieve this target ;

ii. the assessment of the possibility to reach this target whilst ensuring the sustainability of biofuels production in the Community and in third countries, and considering economic, environmental and social impacts, including indirect effects and impacts on biodiversity, as well as the commercial availability of second generation biofuels;

iii. the impact of the implementation of the target on the availability of foodstuffs at affordable prices;

iv. the commercial availability of electric, hybrid and hydrogen powered vehicles, as well as the methodology chosen to calculate the share of renewable energy in the transport sector;

v. the evaluation of specific market conditions, considering in particular markets on which transport fuels represent more than half of the final energy consumption, and markets which are fully dependent on imported biofuels;

[Note: para (c) was deleted]

(d) an evaluation of the implementation of this Directive, in particular with regard to cooperation mechanisms, in order to ensure that, together with the possibility for the Members States to continue the use of national support schemes as referred to in Article 3(2a), these mechanisms enable Member States to achieve the national targets defined in Annex I on the best cost-benefit basis, of technological developments, and the conclusions to be drawn to achieve the target of 20% of energy from renewable sources at European level.

On the basis of this report, the Commission shall submit, if appropriate, proposals to the European Parliament and to the Council, addressing the above elements and in particular:

- for the element contained in littera (a), a modification of the minimum greenhouse gas emission saving referred to in this littera;
- for the element contained in littera (d), appropriate adjustments of the cooperation measures foreseen in this Directive in order to improve their effectiveness for achieving the target of 20%. This proposal shall neither affect the 20% target nor Member States' control over national support and cooperation schemes.

7. In 2018, the Commission shall present a Renewable Energy Roadmap for the post-2020 period.

This report shall, if appropriate, be accompanied by proposals to the European Parliament and to the Council for the period after 2020. For this purpose, the report shall take into account the experience of the implementation of this Directive and technological developments in renewable energies.

8. In 2021, the Commission shall present a report reviewing the application of this Directive. This report shall in particular address the role of the following elements in having enabled Member States to achieve the national targets defined in Annex I on the best cost-benefit basis:
   (a) the process of preparing forecasts and National Action Plans;
   (b) the effectiveness of the cooperation mechanisms;
   (c) technological developments in renewable energies, including the development of the use of biofuels in commercial aviation;
   (d) the effectiveness of the national support schemes;
   (e) the conclusions of the Commission's reports in 2014 and 2018.

Article 20a

Transparency platform

1. The Commission shall establish an online public transparency platform. This platform shall serve to increase transparency, and to facilitate and promote cooperation between Member States, in particular concerning statistical transfers referred to in Article 7 and joint projects referred to in Articles 8 and 9. In addition, the platform may be used to make public relevant information which the Commission or a Member State deems to be of key importance to this Directive and to the achievement of its objectives.

2. The Commission shall make public on the transparency platform the following information, where appropriate in aggregated format preserving the confidentiality of commercially sensitive information:
   (a) Member States' national action plans;
   (b) Member States' forecast documents referred to in Article 4(2bis), complemented as soon as possible with the Commission's summary of excess production and estimated import demand;
   (c) Member States' offers to cooperate on statistical transfers or joint projects, upon request of the Member State concerned;
   (d) the information referred to in Article 7(2) on the statistical transfers between Member States;
   (e) the information referred to in Articles 8(2), 8(3), 9(3) and 9(4) on joint projects;
   (f) Member States' national reports as referred to in Article 19;
   (g) the Commission's reports as referred to in Article 20(3).

   However, upon request of the Member State that submitted the information, the Commission shall not make public Member States' forecast documents referred to in Article 4(2a), and the information in Member States' national reports referred to in Article 19(1) (l) and (m).

Article 21

Committees

1. Except in the cases referred to in paragraph 2, the Commission shall be assisted by the 'Committee on Renewable Energy Sources'.
2. For matters relating to the sustainability of biofuels and other bioliquids, the Commission shall be assisted by the 'Committee on the Sustainability of Biofuels and Other Bioliquids'.
3. Where reference is made to this paragraph, Articles 3 and 7 of Decision 1999/468/EC shall apply, having regard to the provisions of Article 8 thereof.
4. 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 22

Amendments and repeal

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

Article 23

Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by [*18 months after the date of publication in the Official Journal*] at the latest, with the exception of Art. 4(1)(b), (2) and (2a) for which the date of transposition shall be [*twenty days after the date of publication in the Official Journal*].

   When Member States adopt measures, they shall contain a reference to this Directive or shall be accompanied by such a reference on the occasion of their official publication. The methods of making such a reference shall be laid down by the Member States.

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 24

Entry into force

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

Article 25

Addressees

This Directive is addressed to the Member States.

Done at Brussels,

For the European Parliament	For the Council
The President	The President

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

A. National overall targets

	Share of energy from renewable sources in gross final consumption of energy, 2005 (S_{2005})	**Target for share of energy from renewable sources in gross final consumption of energy, 2020 (S_{2020})**
Belgium	2.2%	13%
Bulgaria	9.4%	16%
The Czech Republic	6.1%	13%
Denmark	17.0%	30%
Germany	5.8%	18%
Estonia	18.0%	25%
Ireland	3.1%	16%
Greece	6.9%	18%
Spain	8.7%	20%
France	10.3%	23%
Italy	5.2%	17%
Cyprus	2.9%	13%
Latvia	32.6%	40%
Lithuania	15.0%	23%
Luxembourg	0.9%	11%
Hungary	4.3%	13%
Malta	0.0%	10%
The Netherlands	2.4%	14%
Austria	23.3%	34%
Poland	7.2%	15%
Portugal	20.5%	31%
Romania	17.8%	24%
Slovenia	16.0%	25%
The Slovak Republic	6.7%	14%
Finland	28.5%	38%
Sweden	39.8%	49%
United Kingdom	1.3%	15%

(*) In order to be able to achieve the national objectives set out in this Annex, it is underlined that the State aid guidelines for environmental protection recognise the continued need for national mechanisms of support for the promotion of energy from renewable sources.

B. Indicative trajectory

The indicative trajectory referred to in Article 3(2) shall consist of the following shares of energy from renewable sources:

$S_{2005} + 0.20 (S_{2020} – S_{2005})$, as an average for the two-year period 2011 to 2012;

$S_{2005} + 0.30 (S_{2020} – S_{2005})$, as an average for the two-year period 2013 to 2014;

$S_{2005} + 0.45 (S_{2020} – S_{2005})$, as an average for the two-year period 2015 to 2016; and

$S_{2005} + 0.65 (S_{2020} – S_{2005})$, as an average for the two-year period 2017 to 2018,

where

S_{2005} = the share for that Member State in 2005 as indicated in the table in Part A,

and

S_{2020} = the share for that Member State in 2020 as indicated in the table in Part A.

Annex II - Normalisation rule for accounting for electricity generated from hydropower and wind power

The following rule shall be applied for the purpose of accounting for electricity generated from hydropower in a given Member State:

$$Q_{N(norm)} = C_N * \left[\sum_{i=N-14}^{N} \frac{Qi}{Ci} \right] /(15)$$

where

N = reference year;

$Q_{N(norm)}$ = normalised electricity generated by all hydropower plants of the Member State in year N, for accounting purposes;

Q_i = the quantity of electricity actually generated in year i by all hydropower plants of the Member State measured in GWh, excluding production from pumped storage units using water that has previously been pumped uphill;

C_i = the total installed capacity, net of pumped storage, of all hydropower plants of the Member State at the end of year i, measured in MW.

The following rule shall be applied for the purpose of accounting for electricity generated from wind power in a given Member State:

$$Q_{N(norm)} = \frac{C_N + C_{N-1}}{2} * \frac{\sum_{i=N-n}^{N} Q_i}{\sum_{j=N-n}^{N} \left(\frac{C_j + C_{j-1}}{2} \right)}$$

where

N = reference year;

$Q_{N(norm)}$ = normalised electricity generated by all wind power plants of the Member State in year N, for accounting purposes;

Q_i = the quantity of electricity actually generated in year i by all wind power plants of the Member State measured in GWh;

C_i = the total installed capacity of all the wind power plants of the Member State at the end of year i, measured in MW.

n = 4 or the number of years preceding year N for which capacity and production data are available for the Member State in question, whichever is lower.

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 (ethanol produced from biomass)	27	21
Bio-ETBE (ethyl-tertio-butyl-ether produced on the basis of bioethanol)	36 (of which 37% from renewable sources)	27 (of which 37% 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 22% from renewable sources)	26 (of which 22% from renewable sources)
Bio-DME (dimethylether produced from biomass, to be used as biofuel)	28	19
Bio-TAEE (tertiary-amyl-ethyl-ether produced on the basis of bioethanol)	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 (methyl-ester produced from vegetable or animal oil, of diesel quality, to be used as biofuel)	37	33
Fischer-Tropsch diesel (a synthetic hydrocarbon or mixture of synthetic hydrocarbons produced from biomass)	44	34
Hydrotreated 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 - Certification of installers

The certification schemes or equivalent qualification systems referred to in Article 13(3) shall be based on the following criteria:

1. The certification or qualification 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 thermal installers shall be certified 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. The training leading to installer certification or qualification 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.

5. The training course shall end with an examination leading to a certificate or qualification. The examination shall include a practical assessment of successfully installing biomass boilers or stoves, heat pumps, solar photovoltaic or solar thermal installations.

6. The certification schemes or equivalent qualification systems referred to in Article 13(3) shall take due account of the following guidelines:

a) Accredited training programmes should be offered to installers with working experience, who have undergone, or are undergoing, the following types of training:

i) in the case of biomass boiler and stove installers: training as a plumber, pipe fitter, heating engineer or technician of sanitary and heating or cooling equipment as a prerequisite;

ii) 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 or cooling systems) as a prerequisite;

iii) in the case of a solar photovoltaic or solar thermal 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

iv) 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.

b) The theoretical part of the biomass stove and boiler installer training should give an overview of the market situation of biomass and cover ecological aspects, biomass fuels, logistics, fire protection, related 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 should also provide good knowledge of any European standards for technology and biomass fuels, such as pellets, and biomass related national and European legislation.

c) The theoretical part of the heat pump installer training should give an overview of the market situation for heat pumps and cover geothermal resources and ground source temperatures of different regions, soil and rock identification for thermal conductivity, 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 should also provide good knowledge of any European standards for heat pumps, national and of relevant national and European legislation. The installer should demonstrate the following key competences:

i) 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);

ii) 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; and

iii) 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.

d) The theoretical part of the solar photovoltaic and solar thermal installer training should give an overview of the market situation of solar products and cost and profitability comparisons, and cover ecological aspects, components, characteristics and dimensioning of solar systems, selection of accurate systems and dimensioning of components, determination of the heat demand, fire protection, related subsidies, as well as the design, installation, and maintenance of solar photovoltaic and solar thermal installations. The training should also provide good knowledge of any European standards for technology, and certification such as Solar Keymark, and related national and European legislation. The installer should demonstrate the following key competences:

i) 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;

ii) 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;

iii) 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 bal nce of system equipment required for the installation; and

iv) 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.

e) The installer certification should be time restricted, so that a refresher seminar or event would be necessary for continued certification.

[Note: Annexes V and VI deleted]

ANNEX VII

Rules for calculating the greenhouse gas impact of biofuels, other bioliquids and their fossil fuel comparators

A. Typical and default values for biofuels if produced with no net carbon emissions from land use change

biofuel production pathway	**typical greenhouse gas emission saving**	**default greenhouse gas emission saving**
sugar beet ethanol	61%	52%
wheat ethanol (process fuel not specified)	32%	16%
wheat ethanol (lignite as process fuel in CHP plant)	32%	16%
wheat ethanol (natural gas as process fuel in conventional boiler)	45%	34%
wheat ethanol (natural gas as process fuel in CHP plant)	53%	47%
wheat ethanol (straw as process fuel in CHP plant)	69%	69%
corn (maize) ethanol, Community produced (natural gas as process fuel in CHP plant)	56%	49%
sugar cane ethanol	71%	71%
the part from renewable sources of ETBE (ethyl-tertio-butyl-ether)	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE (tertiary-amyl-ethyl-ether)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	45%	38%
sunflower biodiesel	58%	51%
soybean biodiesel	40%	31%

palm oil biodiesel (process not specified)	36%	19%
palm oil biodiesel (process with methane capture at oil mill)	62%	56%
waste vegetable or animal (*) oil biodiesel	88%	83%
Hydrotreated vegetable oil from rape seed	51%	47%
Hydrotreated vegetable oil from sunflower	65%	62%
Hydrotreated vegetable oil from palm oil (process not specified)	40%	26%
Hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	68%	65%
pure vegetable oil from rape seed	58%	57%
biogas from municipal organic waste as compressed natural gas	80%	73%
biogas from wet manure as compressed natural gas	84%	81%
biogas from dry manure as compressed natural gas	86%	82%

(*) Not including animal oil produced from animal by products classified as category 3 material in accordance with Regulation (EC) 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules on animal by products not intended for human consumption[1].

[1] OJ L 273, 10.10.2002, p. 1.

B. Estimated typical and default values for future biofuels that are not or in negligible quantities on the market in January 2008, if produced with no net carbon emissions from land use change

biofuel production pathway	**typical greenhouse gas emission saving**	**default greenhouse gas emission saving**
wheat straw ethanol	87%	85%
waste wood ethanol	80%	74%
farmed wood ethanol	76%	70%
waste wood Fischer-Tropsch diesel	95%	95%
farmed wood Fischer-Tropsch diesel	93%	93%
waste wood DME (dimethylether)	95%	95%
farmed wood DME (dimethylether)	92%	92%
waste wood methanol	94%	94%
farmed wood methanol	91%	91%
the part from renewable sources of MTBE (methyl-tertio-butyl-ether)	Equal to that of the methanol production pathway used	

C. Methodology

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

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

where

E = total emissions from the use of the fuel;

e_{ec} = 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_{sca} = emission savings from soil carbon accumulation via improved agricultural management;

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

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

e_{ee} = emission savings from excess electricity from cogeneration.

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

2. Greenhouse gas emissions from fuels, E, shall be expressed in terms of grams of CO_2 equivalent per MJ of fuel, gCO_{2eq}/MJ.

3. In exception to paragraph 2, for transport fuels, 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/MJ. Such adjustments shall only be made where evidence of the differences in useful work done is provided.

4. Greenhouse gas emission savings from biofuels and other bioliquids shall be calculated as:

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

where

E_B = total emissions from the biofuel or other bioliquid; and

E_F = total emissions from the fossil fuel comparator.

5. The greenhouse gases taken into account for the purposes of paragraph 1 shall be CO_2, N_2O and CH_4. For the purpose of calculating CO_2 equivalence, these gases shall be valued as follows:

CO_2: 1

N_2O: 296

CH_4: 23

6. Emissions from the extraction or cultivation of raw materials, e_{ec}, shall include emissions from the extraction or cultivation process itself; from the collection of raw materials; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation. Capture of CO_2 in the cultivation of raw materials shall be excluded. Certified reductions of greenhouse gas emissions from flaring at oil production sites anywhere in the world shall be deducted. Estimates 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.

7. 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:

$e_l = (CS_R - CS_A) \times 3.664 \times 1/20 \times 1/P - e_B$,

where

e_l = annualised greenhouse gas emissions from carbon stock change due to land use change (measured as mass of CO_2-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). The reference land use shall be the land use in January 2008 or 20 years before the raw material was obtained, whichever was the later;

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). In cases where the carbon stock accumulates over more than one year, the value attributed to CS_A shall be the estimated stock per unit area after twenty years or when the crop reaches maturity, whichever is the earlier;

P = the productivity of the crop (measured as biofuel or other bioliquid energy per unit area per year); and

e_B = bonus of 29 gCO_2eq/MJ biofuel or other bioliquid if biomass is obtained from restored degraded land under the conditions provided for in point 7a.

7a. The bonus of 29 gCO_{2eq}/MJ shall be attributed if evidence is provided that the land:

(a) was not in use for agriculture or any other activity in January 2008; and

(b) falls into one of the following categories:

(i) severely degraded land, including such land that was formerly in agricultural use;

(ii) heavily contaminated land.

The bonus of 29 gCO_{2eq}/MJ shall apply for a period of up to 10 years from the date of conversion of the land to agricultural use, provided that a steady increase in carbon stocks as well as a sizable reduction in erosion phenomena for land falling under (i) are ensured and that soil contamination for land falling under (ii) is reduced.

7b. The categories mentioned in point 7a(b) are defined as follows:

(a) "severely degraded land" means land that, for a significant period of time, has either been significantly salinated or presented significantly low organic matter content and been severely eroded;

(b) "heavily contaminated land" means land that is unfit for the cultivation of food and feed due to soil contamination.

Such land shall include land that has been the subject of a Commission decision in accordance with the fourth subparagraph of Article 16(4).

8. The Commission shall adopt by 31 December 2009 a guide for the calculation of land carbon stocks drawing on the 2006 IPCC Guidelines for National Greenhouse Gas Inventories – volume 4. Once the Commission has done this, this guide shall serve as the basis for the calculation of land carbon stocks for the purposes of this Directive.

9. 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, 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.

10. 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. Emissions from transport and distribution to be taken into account under point 6 shall not be covered by point 10.

11. Emissions from the fuel in use, e_u, shall be taken to be zero for biofuels and other bioliquids.

12. Emission savings from carbon capture and geological storage e_{ccs}, that have not already been accounted for in $e_{p,}$ shall be limited to emissions avoided through the capture and sequestration of emitted CO_2 directly related to the extraction, transport, processing and distribution of fuel.

13. Emission savings from carbon capture and replacement, e_{ccr}, shall be limited to emissions avoided through the capture of CO_2 of which the carbon originates from biomass and which is used to replace fossil-derived CO_2 used in commercial products and services.

14. Emission savings from excess electricity from cogeneration, e_{ee}, shall be taken into account in relation to the excess electricity produced by fuel production systems that use cogeneration except where the fuel used for the cogeneration is a co-product other than 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.

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 the co-products in proportion to their energy content (determined by lower heating value in the case of co-products other than electricity).

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 and other bioliquids, all co-products, including electricity that does not fall under the scope of paragraph 14, shall be taken into account for the purposes of this calculation, except for agricultural crop residues, including straw, bagasse, husks, cobs and nut shells. 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, agricultural crop residues, including straw, bagasse, husks, cobs and nut shells, and residues from processing, including crude glycerine (glycerine that is not refined), 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 biofuels, for the purposes of the calculation referred to in paragraph 4, the fossil fuel comparator E_F shall be the latest available actual average emissions from the fossil part of petrol and diesel consumed in the Community as reported under [Directive 98/70/EC]. If no such data are available, the value used shall be 83.8 gCO_{2eq}/MJ.

For bioliquids used for electricity production, for the purposes of the calculation referred to in paragraph 4, the fossil fuel comparator E_F shall be 91 gCO_{2eq}/MJ.

For bioliquids used for heat production, for the purposes of the calculation referred to in paragraph 4, the fossil fuel comparator E_F shall be 77 gCO_{2eq}/MJ.

For bioliquids used for cogeneration, for the purposes of the calculation referred to in paragraph 4, the fossil fuel comparator E_F shall be 85 gCO_{2eq}/MJ.

D. Disaggregated default values for biofuels and bioliquids

Cultivation: 'e_{ec}' as defined in Part C of this Annex

biofuel and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
sugar beet ethanol	12	12
wheat ethanol	23	23
corn (maize) ethanol, Community produced	20	20
sugar cane ethanol	14	14
the part from renewable sources of ETBE (ethyl-tertio-butyl-ether)	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE (tertiary-amyl-ethyl-ether)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	29	29
sunflower biodiesel	18	18
soybean biodiesel	19	19
palm oil biodiesel	14	14
waste vegetable or animal oil biodiesel	0	0
Hydrotreated vegetable oil from rape seed	30	30
Hydrotreated vegetable oil from sunflower	18	18
Hydrotreated vegetable oil from palm oil	15	15
pure vegetable oil from rape seed	30	30
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 (including excess electricity): 'e_p - e_{ee}' as defined in Part C of this Annex

biofuel and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
sugar beet ethanol	19	26
wheat ethanol (process fuel not specified)	32	45
wheat ethanol (lignite as process fuel in CHP plant)	32	45
wheat ethanol (natural gas as process fuel in conventional boiler)	21	30
wheat ethanol (natural gas as process fuel in CHP plant)	14	19
wheat ethanol (straw as process fuel in CHP plant)	1	1
corn (maize) ethanol, Community produced (natural gas as process fuel in CHP plant)	15	21
sugar cane ethanol	1	1
the part from renewable sources of ETBE (ethyl-tertio-butyl-ether)	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE (tertiary-amyl-ethyl-ether)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	16	22
sunflower biodiesel	16	22
soybean biodiesel	18	26
palm oil biodiesel (process not specified)	35	49
palm oil biodiesel (process with methane capture at oil mill)	13	18
waste vegetable or animal oil biodiesel	9	13
Hydrotreated vegetable oil from rape seed	10	13
Hydrotreated vegetable oil from sunflower	10	13

Hydrotreated vegetable oil from palm oil (process not specified)	30	42
Hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	7	9
pure vegetable oil from rape seed	4	5
biogas from municipal organic waste as compressed natural gas	14	20
biogas from wet manure as compressed natural gas	8	11
biogas from dry manure as compressed natural gas	8	11

Transport and distribution: ' e_{td} ' as defined in Part C of this Annex

biofuel and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
sugar beet ethanol	2	2
wheat ethanol	2	2
corn (maize) ethanol, Community produced	2	2
sugar cane ethanol	9	9
the part from renewable sources of ETBE (ethyl-tertio-butyl-ether)	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE (tertiary-amyl-ethyl-ether)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	1	1
sunflower biodiesel	1	1
soybean biodiesel	13	13
palm oil biodiesel	5	5
waste vegetable or animal oil biodiesel	1	1
Hydrotreated vegetable oil from rape seed	1	1

Hydrotreated vegetable oil from sunflower	1	1
Hydrotreated 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 and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
sugar beet ethanol	33	40
wheat ethanol (process fuel not specified)	57	70
wheat ethanol (lignite as process fuel in CHP plant)	57	70
wheat ethanol (natural gas as process fuel in conventional boiler)	46	55
wheat ethanol (natural gas as process fuel in CHP plant)	39	44
wheat ethanol (straw as process fuel in CHP plant)	26	26
corn (maize) ethanol, Community produced (natural gas as process fuel in CHP plant)	37	43
sugar cane ethanol	24	24
the part from renewable sources of ETBE (ethyl-tertio-butyl-ether)	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE (tertiary-amyl-ethyl-ether)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	46	52
sunflower biodiesel	35	41
soybean biodiesel	50	58
palm oil biodiesel (process not specified)	54	68
palm oil biodiesel (process with methane capture at oil mill)	32	37
waste vegetable or animal oil biodiesel	10	14
Hydrotreated vegetable oil from rape seed	41	44
Hydrotreated vegetable oil from sunflower	29	32

Hydrotreated vegetable oil from palm oil (process not specified)	50	62
Hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	27	29
pure vegetable oil from rape seed	35	36
biogas from municipal organic waste as compressed natural gas	17	23
biogas from wet manure as compressed natural gas	13	16
biogas from dry manure as compressed natural gas	12	15

E. Estimated disaggregated default values for future biofuels and bioliquids that are not or in negligible quantities on the market in January 2008

Disaggregated default values for cultivation: 'e_{ec}' as defined in Part C of this Annex

biofuel and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
wheat straw ethanol	3	3
waste wood ethanol	1	1
farmed wood ethanol	6	6
waste wood Fischer-Tropsch diesel	1	1
farmed wood Fischer-Tropsch diesel	4	4
waste wood DME (dimethylether)	1	1
farmed wood DME (dimethylether)	5	5
waste wood methanol	1	1
farmed wood methanol	5	5
the part from renewable sources of MTBE (methyl-tertio-butyl-ether)	Equal to that of the methanol production pathway used	

Disaggregated default values for processing (including excess electricity): e_p - e_{ee}' as defined in Part C of this Annex

biofuel and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
wheat straw ethanol	5	7
wood ethanol	12	17
wood Fischer-Tropsch diesel	0	0
wood DME (dimethylether)	0	0
wood methanol	0	0
the part from renewable sources of MTBE (methyl-tertio-butyl-ether)	Equal to that of the methanol production pathway used	

Disaggregated default values for transport and distribution: ' e_{td} ' as defined in Part C of this Annex

biofuel and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
wheat straw ethanol	2	2
waste wood ethanol	4	4
farmed wood ethanol	2	2
waste wood Fischer-Tropsch diesel	3	3
farmed wood Fischer-Tropsch diesel	2	2
waste wood DME (dimethylether)	4	4
farmed wood DME (dimethylether)	2	2
waste wood methanol	4	4
farmed wood methanol	2	2
the part from renewable sources of MTBE (methyl-tertio-butyl-ether)	Equal to that of the methanol production pathway used	

Total for cultivation, processing, transport and distribution

biofuel and other bioliquid production pathway	**Typical greenhouse gas emissions (gCO_{2eq}/MJ)**	**Default greenhouse gas emissions (gCO_{2eq}/MJ)**
wheat straw ethanol	11	13
waste wood ethanol	17	22
farmed wood ethanol	20	25
waste wood Fischer-Tropsch diesel	4	4
farmed wood Fischer-Tropsch diesel	6	6
waste wood DME (dimethylether)	5	5
farmed wood DME (dimethylether)	7	7
waste wood methanol	5	5
farmed wood methanol	7	7
the part from renewable sources of MTBE (methyl-tertio-butyl-ether)	Equal to that of the methanol production pathway used	

ANNEX VII A

Minimum requirements for the harmonised template for national renewable energy action plans (RAP)

1) Expected final energy consumption

Gross final energy consumption in electricity, transport and heating and cooling for 2020 taking into account the effects of energy efficiency policy measures.

2) National sectoral 2020 targets and estimated shares of energy from renewable sources in electricity, heating and cooling and transport

(a) targeted share of energy from renewable resources in electricity in 2020;

(b) estimated trajectory for the share of energy from renewable resources in electricity;

(c) targeted share of energy from renewable resources in heating and cooling in 2020;

(d) estimated trajectory for the share of energy from renewable sources in heating and cooling;

(e) targeted trajectory for the share of energy from renewable resources in transport;

(f) its national indicative trajectory as referred to in Article 3(2) and part B of Annex I.

3) Measures for achieving the targets

(a) overview of all policies and measures concerning the promotion of the use of energy from renewable resources;

(b) specific measures to fulfil the requirements of Articles 12, 13 and 14, including the need to extend and/or to reinforce existing infrastructure to facilitate the integration of the quantities of renewables needed to achieve the 2020 national target, measures to accelerate the authorisation procedures, measures to reduce non-technological barriers and measures concerning Articles 15 to 18;

(c) support schemes for the promotion of the use of energy from renewable resources in electricity applied by the Member State or a group of Member States;

(d) support schemes for the promotion of the use of energy from renewable resources in heating and cooling applied by the Member State or a group of Member States;

(e) support schemes for the promotion of the use of energy from renewable resources in transport applied by the Member State or a group of Member States;

(f) specific measures on the promotion of the use of energy from biomass, especially for new biomass mobilisation taking into account:

(i) biomass availability: both domestic potential and import ;

(ii) measures to increase biomass availability, taking into account other biomass users (agriculture and forest based sectors);

(g) planned use of statistical transfers between Member States and planned participation in joint projects with other Member States and third countries;

(i) the estimated excess production of renewable energy compared to the indicative trajectory which could be transferred to other Member States;

(ii) the estimated potential for joint projects;

(iii) the estimated demand for renewable energy to be satisfied by means other than domestic production.

4) Assessments

(a) the total contribution expected of each renewable energy technology to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity, heating and cooling and transport;

(b) the total contribution expected of the energy efficiency and energy saving measures to meet the binding 2020 targets and the indicative interim trajectory for the shares of energy from renewable resources in electricity, heating and cooling and transport.

ANNEX VII B

Accounting of energy from heat pumps

The amount of ambient energy captured by heat pumps to be considered renewable energy for the purposes of this Directive, $E_{RES,}$ shall be calculated in accordance with the following formula:

$$E_{RES} = Q_{usable} * (1 – 1/SPF)$$

where

- Q_{usable} = the estimated total usable heat delivered by heat pumps fulfilling the criteria referred to in Article 5(5), implemented as follows: Only heat pumps for which SPF > 1.15 * 1/ η shall be taken into account.
- SPF = the estimated average seasonal performance factor for these heat pumps
- η is the ratio between total gross production of electricity and the primary energy consumption for electricity production and shall be calculated as an EU average based on EUROSTAT data.

No later than 1 January 2013, the Commission shall establish guidelines on how Member States shall estimate the values of Q_{usable} and SPF for the different heat pump technologies and applications, taking into consideration differences in climatic conditions, especially very cold climates.

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