Public consultation on accounting methods and conditions for the 10 % renewable energy in transport target – and on the need for additional types of biofuels being listed in Annex III of the Renewable Energy Directive

Introduction

The European Union (EU) has set in the Renewable Energy Directive[1] ('the Directive') an overall 20 % renewable energy target in final energy consumption and a 10 % target of renewable energy in transport for 2020. For the transport sector each Member State has to ensure that the share of energy from renewable sources in all forms of transport in 2020 is at least 10 % of the final consumption of energy in transport in that Member State. All forms of energy from renewable sources can contribute to the target, including biofuels - liquid or gaseous - and electricity produced from renewable sources. The Directive required Member States to submit by June 2010 National Renewable Energy Action Plans[2] setting out inter alia the contribution expected of each renewable energy technology to meet the 2020 targets, including in the transport sector. The Renewable Energy Directive contains rules for the calculation of the 10% target[3].

For biofuels, this involves using the energy contents that are listed in Annex III to the Directive. This Annex can be updated. This public consultation, in section D, seeks views on whether and how the Annex should be updated.

For the contribution of electricity from renewable sources, the Directive prescribes that the average share of electricity produced from renewable energy sources (Member States or EU level) has to be taken into account in the calculation. In addition, the Directive requires the Commission to present by December 2011, if appropriate, 'a proposal permitting, subject to certain conditions, the whole amount of the electricity used to power electric vehicles to be counted towards the 10% target'. This public consultation, in section A, seeks views on what conditions could reasonably be applied for this.

As far as hydrogen originating from renewable sources is concerned, the Directive does not include any specific rules on how to account this towards the 10% target. Further, hydrogen is currently not part of the EU energy statistics system. This means that Eurostat and the Member States would develop statistical methodologies along the lines of the overall energy balance when the contribution of hydrogen to the fuel mix will become significant. The Directive requires the Commission to present by December 2011, if appropriate, 'a proposal for a methodology for calculating the contribution of hydrogen originating from renewable sources for counting towards the 10% target'. This public consultation, in section B, seeks views on what method(s) could reasonably be applied for this.

For the contribution of methane originating from renewable sources (biomethane[4]) and supplied via the natural gas grid, the Directive does not include any specific rules for the calculation towards the 10% target. In the absence of accurate statistical methods for measuring the share of injected biomethane consumption by sector, Eurostat would attribute

1 Directive 2009/28/EC OJ L140 of 5.06.2009 p. 16

2 All plans are available at: http://ec.europa.eu/energy/renewables/transparency_platform/action_plan_en.htm

3 In Article 3(4) and 5(5)

4 Either biogas upgraded to the quality of natural gas or gas of similar quality produced from biomass by other production methods.

to each natural gas consuming sector a portion of the biogas injected to the natural gas network, proportional to each sector's natural gas consumption. The Commission considers that it is of interest to further explore the accounting of biomethane from the grid, in parallel to those for electricity and hydrogen from renewable sources. This public consultation, in section C, seeks views on whether other accounting methods could be appropriate to apply for this.

The consultation is open from 14/04/2011 and closes on 14/06/2011. This questionnaire exists only in English, but responses can be in any EU language. If you have views on some questions and not others, feel free to send an answer covering only these questions.

Contributions will be published: http://ec.europa.eu/energy/consultations/index_en.htm

This document has been prepared by the Commission services as a basis for comments. It does not prejudge the final form of any decision to be taken by the Commission.

Section A: Electricity from renewable sources in transport

According to the National Renewable Energy Action Plans, Member States estimate that the contribution of renewable electricity will by 2020 account for approximately 1% of energy consumed in transport: 0.8% in non-road transport (mainly in trains) and 0.2%[5] in road transport, including electric cars, trolleybuses, etc.

Given that electricity is generated from both renewable as well as non-renewable sources,

1. how do you value the impact of the 10% target for renewable energy in transport by 2020 on the development of electric vehicles?

- Not significant.

- Not significant. This is mainly because the high energy efficiency of electric cars means their energy consumption is significantly lower than the consumption of fossil fuels from conventional cars which run on petrol or diesel which they displace. It is anticipated that 47% of electricity production in Denmark in 2020 will originate from renewable sources of energy. If about 10% of conventional cars, corresponding to about 220 000 conventional cars, were exchanged for electrical cars, this would correspond to about 1 percentage point of the renewable energy target of 10% for transport (including factor 2.5). The target would encourage the use of electrical cars more if it also took into account energy efficiency and the amount of displaced oil consumption. It should also be noted that in general the production of electricity from renewable energy sources has no or much smaller conversion losses than thermal electricity production in the EU.

- Significant, but other policies/developments will be of more importance
- Important, along with other policies/developments
- A key driver

2. under what condition do you think it would be justified to count the whole amount of electricity in electric vehicles as renewable?

- None
- When the electricity is produced fully from renewable energy and without connection to the electricity grid.

- Yes.

- When the electricity comes with a tradable certificate showing that that amount of renewable electricity was generated.

- We would like to start by pointing out that electricity from renewable energy sources that is traded through the system of guarantee of origin under Article 15(2) of the Renewable Energy Directive may not be counted as renewable energy towards either the overall renewable energy target or the renewable energy target of the transport sector. If other forms of tradable certificates are meant, the initial step must be to decide whether – and if so, why – another form of virtual electricity trading can be used towards meeting countries' renewable energy targets.
- If it can, the answer is 'yes' but the following conditions must be met: In the case of tradable certificates which can be traded over national borders, as is being planned for the certificate market between Sweden and Norway, there are several conditions that need to be met before virtual trading with electricity from renewable energy sources can count as part of the renewable energy share of the transport sector. Firstly, it is Denmark's view that support for electricity from renewable sources of energy should be provided to those countries that can

count renewable energy consumption as part of their share of renewable energy, and secondly, it must be ensured that renewable energy consumption is not included in the renewable energy statistics of more than one country. In the case of countries that use a national certification system, this would hardly create any problems in allocating support or lead to double counting.

- When there is a supply contract showing that that amount of renewable electricity was generated.
- No, a contract like this will not ensure exclusive use of that amount of renewable electricity.

- When there is evidence on a Member State level that the development of electric vehicles has led to that amount of additional renewable electricity generation.
- Yes, if documentation can be provided to show that there is a demand for more electricity from renewable energy sources for electric cars and/or the capacity for electrical production has been created to satisfy demand.

- Other (please specify):
- If new capacity for electrical production is based on renewable energy. The new capacity for renewable energy production in that case would be used to supply energy for new types of electricity consumption, including electric cars and heat pumps.
- If charging is done in an intelligent manner aimed at ensuring a higher renewable energy share of the electricity being charged. Unless otherwise stated, it is suggested that Member State's average production of electricity from renewable energy sources can be used to calculate the renewable electricity consumption of the total number of electrical cars. It should only be possible to use a higher share of renewable energy than the average share of renewable energy of the Member State's total electricity production if this is based on documentation showing that charging is controlled and ensures that electricity being charged has a higher share of renewable energy. Examples of this include charging profiles, which control the share of energy from renewable sources, charging based on tradable certificates and using battery chargers that control charging in an intelligent manner, identify electric cars, measure electricity consumption and enable the use of electric cars to stabilise and support the electricity system (ancillary services).

3. what benefits do you expect the option you selected under (2) will have:
- Additional renewable electricity generation.
- Yes, as intelligent charging will promote the flexible use of fluctuating energy from renewable sources. Tradable certificates can lead to increased willingness to pay for renewable electricity among the owners of electric cars, which would promote and make use of increased production of electricity from renewable energy sources and new capacity for the production of electricity from renewable energy sources.

- Faster development of electric vehicles
- A large proportion of those buying electric cars would probably have a clear interest in the possibility of using electricity from renewable energy sources as a fuel.

- Other (please specify):
- None, it only changes the accounting method

Please motivate your answer

4. what costs in terms of administrative burden do you expect the implementation of the option you selected under (2) will have:
- Additional statistics collection in all Member States
- In any case, there would be a need to ensure intelligent charging and communication with the electricity system in the long term and payment systems etc. for other reasons, including to

avoid overloading the electricity grid, secure payment streams, and secure income for those operating balancing energy/ancillary services etc. Electric cars are expected to become a significant part of the general development of the smart grid.

- Generating additional information on the basis of existing statistics
- Other (please specify):
- None

[5] This 0.2% counts however with a multiplication factor of 2.5 towards the 10% target - Cf. Article 3(4) of the Directive.

Section B: Hydrogen from renewable sources in transport

According to the National Renewable Energy Action Plans, only one Member State estimates that hydrogen from renewables will be used in transport by 2020.

1. Which are in your view the most likely ways to produce hydrogen from renewable sources (partly or fully) by 2020?
- From biomethane, e.g. by steam reforming/partial oxidation
- From a mixture of natural gas and biomethane, e.g. by steam reforming/partial oxidation
- On the basis of renewable electricity, by electrolysis
- On the basis of the electricity mix from the grid, by electrolysis
- From biomass directly, e.g. by gasification/partial oxidation or biological processes
- Other (please specify):
- None are likely to be significant by 2020

- Initiatives are underway in Denmark to set up hydrogen infrastructure for transport. The target is to set up 15 hydrogen fuelling stations by 2015.

- At the current time it is difficult to predict which source of energy will be the dominant one for hydrogen production, but the most likely is electrolysis based on a mixture of electricity from the grid. Alternatively, hydrogen production can be based on solid oxide fuel cell electrolysis of natural gas/biomethane from the gas grid provided that biomethane is available. Solid oxide fuel cell electrolysis is currently under development and will probably not reach a preliminary commercial stage until 2010.

- Regardless of the method of production, it is not expected that hydrogen for hydrogen-powered cars will make a significant contribution towards the target of using 10% renewable resources in the transport sector, because of the relatively low numbers of hydrogen-powered cars expected on the market in 2020.

2. For each option you selected under (2), if it would be used for transport, how would you suggest to calculate its contribution to the 10% target for renewable energy in transport?

- The method used for calculating the use of hydrogen produced by electrolysis will be based on the one used for calculating electricity consumption under section A.

Section C: Biomethane via the natural gas grid in transport

According to the National Renewable Energy Action Plans, Member States estimate that biofuels other than first and second generation bioethanol and biodiesel will by 2020 account for approximately 0.2% of energy consumed in transport, part or all of which may be biomethane.

Given that methane in the gas grid originates mostly from non-renewable sources (natural gas),

1. how do you value the impact of the 10% target for renewable energy in transport by 2020 on the development of methane vehicles fuelled by methane from the gas grid?

- Not significant.
- Not significant It is expected that the target will be met mainly using liquid biofuels.
- Significant, but other policies/developments will be of more importance
- Important, along with other policies/developments
- A key driver

2. under what condition do you think it would be justified to count the whole amount of methane extracted from the gas grid for the use in vehicles as renewable?

- None, until the time that all methane injected into the gas grid concerned is originating from renewable sources
- When the methane comes with a tradable certificate showing that that amount of biomethane was generated.
- Yes, but on the same conditions as apply to virtual electricity trading. It must be decided whether - and if so, how - virtual gas trading can be used to reach targets for countries with regard to both the overall share of renewable energy and the share of renewable energy of the transport sector. In the case of tradable certificates which can be traded over national borders, there are – as with electricity – further conditions that need to be met before virtual biogas trading can count as part of the renewable energy share of the transport sector. Firstly, support for biogas should be given to those countries that can count renewable energy consumption as part of their share of renewable energy, and secondly, it must be ensured that renewable energy consumption is not counted as part of the renewable energy statistics of more than one country. As part of its 'Energy Strategy 2050' the government in Denmark has proposed that support for biogas be adjusted so that part of the support is given to biogas production, which will make it difficult to count biogas sold virtually to another country as part of the renewable energy share of the country virtually consuming biogas. In the case of countries that use a national certification system, this would hardly create any problems in allocating support or lead to double counting.

- When there is a supply contract showing that that amount of biomethane was generated.
- No, a contract like this will not ensure exclusive use of that amount of generated biomethane.

- When there is evidence on a Member State level that the development of methane vehicles has led to that amount of additional biomethane generation
- Other (please specify):

3. what benefits do you expect the option you selected under (2) will have:

- Additional biomethane generation
- Faster development of methane vehicles.
- Possibly greater willingness to pay for biogas for transport by means of tradable certificates would promote the use of biogas in transport.

- Other (please specify):
- None, it only changes the accounting method

Please motivate your answer

4. what costs in terms of administrative burden do you expect the implementation of the option you selected under (2) will have:
- Additional statistics collection in all Member States
- In the future there will in any event be a need in all Member States to calculate how much biogas is upgraded and injected into the natural gas grid, purely to establish how much biogas can be assumed to be transported physically over national borders and be used to meet the targets of another country. If virtual trading is also to be used in meeting the targets of other countries, this will require further statistics to be gathered centrally to monitor that double counting in more than one Member State has not taken place.

- Generating additional information on the basis of existing statistics
- Other (please specify):
- Ensuring that state support to promote biogas is only paid in those countries allowed to count biogas towards their targets can be expected to create administrative work. The same problem applies to avoiding double counting.

- None

Section D: Energy content of biofuels

According to the National Renewable Energy Action Plans, Member States estimate that the contribution of biofuels will be approximately 9.5% of energy consumed in transport, most of which is expected to be biodiesel and bioethanol.

1. Do you think additional types of biofuels need to be listed in Annex III of the Directive? If yes, which ones and could you provide values?

- No.

Please provide references for suggested values

2. Do you think more precision in terms of decimals is necessary in the values in the Annex? If yes, could you provide such values?

- Denmark usually indicates decimals to one or two decimal places.

Please provide references for suggested values