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Open consultation on requirements for a sustainability scheme for energy uses of biomass

QUESTIONS

PART A – General questions and scope

Question A1

Is there a need for a sustainability scheme for biomass for electricity and heating purposes?

Yes

No

If yes, should such a scheme be introduced at:

EU level, and as such to have a single scheme across the EU

Member State level

Please explain your choice(s):

But we strongly advice against introducing a detailed regulation of sustainability for solid biomass in the RES-directive or in the near future.

The issue is complicated, and a hasty decision based on the same criteria as have been proposed for liquid biofuels for the transport sector may strongly hamper the current positive development of solid biomass for heating and electricity in Europe.

In Sweden, the use of biomass for energy has grown from 40 TWh in the 1970-ies to 120 TWh today. This development has taken place mainly because of strong incentives like a high carbon dioxide tax and green electricity certificates. The biomass used is mainly residues and by-products from forestry and forest industry, but also some dedicated crops, like willows.

The Energy efficiency in the systems are high, for example is practically all bio-electricity produced in combined heat and power processes, both in district heating and in industry. The carbon balance is also very positive. The use of solid biofuels has resulted in massive substitution of fossil fuels. Adverse environmental effects have not been recorded. Instead the use of waste products has reduced emissions to air (methane) and water.

At a national level the carbon stock in the Swedish forests has grown steadily during the last one hundred years. The yearly growth in the forests, and the binding of carbon in the forests, exceeds the yearly felling with about 30 - 40 percent.

The sustainability of forestry in Sweden is guaranteed by the national forestry legislation and the oversight of the Swedish Forest Agency. The sustainability of agriculture is in the same manner guaranteed by the agricultural authorities and the cross compliance rules of the European Union. Biomass for energy produced in forestry and agriculture should be handled the same way as other products from forestry and agriculture.

It is sufficient for EU to ask the member states to submit information about the sustainability criteria in their own national legislation on forestry and agriculture.

Question A2

A biomass sustainability scheme should be:

legally binding, where only biomass which meet the sustainability criteria would count towards the national renewable energy targets laid down in the RES-Directive (this is the approach followed in the biofuels sustainability scheme)

legally binding, where all electricity and heat producers with installed capacity above a certain size – say 25 kW – would be required to procure only sustainable biomass - this option would exclude small-scale purchasers of biomass (e.g. pellets used in biomass boilers in the household).

legally binding, where biomass producers (biomass from agriculture, forestry and waste) could only place sustainable biomass on the market

a voluntary scheme, where biomass producers and electricity, heating and cooling providers must inform consumers about the sustainability of biomass produced/ consumed with appropriate labelling/ information

Please explain how your choice could work in practice:

The general sustainability criteria should be guaranteed by the legislation in the member states as part of the national legislation on forestry, agriculture and natural conservation.

Besides the national legislation more than 40 countries in Europe, among them all the 27 EU member states, and the European Commission, have agreed on sustainability criteria and indicators for sustainable forest management in MCPFE (the Ministerial Conference on the Protection of Forests in Europe). These sustainability rules are the result of a 20 year long process, where forest experts, researchers, civil servants and politicians have worked together to develop criteria and definitions.

There is also a number of voluntary certification schemes in place, supported by natural conservation organisations.

We strongly advice against developing new criteria for biomass beside these existing criteria. The end result will be more bureaucracy for the bioenergy business community.

One strong argument for a voluntary scheme is that it makes it easier to consider small-scale producers and users of biofuels. A large part of the market is composed of such small players on local markets.

Question A3

Biomass is defined as/considered to be: the biodegradable fraction of products, waste and residues from biological origin, from agriculture (including vegetal and animal substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste.

Please indicate which of the following biomass for the production of heating and electricity should be considered by a biomass sustainability scheme:

Solid biomass:

forestry harvesting residues (stems, tops, bark, branches, stumps, leaves and coarse roots)

forest-based produce such as fuel wood

wood-processing residues (sawdust, shavings, woodchips, wood briquettes and pellets)

energy crops

agricultural/ crop residues (cereal straws, bagasse, husks, cobs, nut shells, grains)

recovered post-consumer wood

biodegradable fraction of municipal waste

other biodegradable fraction of industrial waste

Biogas derived from:

animal manure

slurry

green waste

waste food

Bioliqids derived from (the term bioliqids is used for electricity and heating purposes, whereas biofuels refers to transport uses):

plants and vegetable oils

tall oil

black liquor

Please explain your choice(s):

The definition “the biodegradable fraction of...” is inaccurate and should be changed. The important factor defining these fuels as renewable is that they stem from biological production systems, not that they are biodegradable. There are on the one hand biodegradable plastics and chemicals produced from fossil fuels, and on the other hand there is charcoal produced from wood, that is virtually inert and doesn't degrade in thousands of years (ask an archeologist!).

The only products that could be considered for a separate sustainability schemes are the dedicated energy crops and the production of fuel wood. The rest of the listed biomasses are residues or by-products, and the sustainability for these products should be linked to the production of the main product.

Dedicated energy crops should be treated as other crops in agriculture. The carbon efficiency can be guaranteed by imposing carbon dioxide taxation on diesel fuels and on the fertiliser industry.

Fuel wood is almost entirely produced and used in small scale in farming and rural communities. In our country this has been a main traditional form of heat production, and does not need to be regulated on European level.

Plantations of trees for energy (poplars, hybrid aspen) should be treated as other energy crops. Besides the listed biomasses also dedicated crops for biogas production should be included (maize, ley crops and others).

Question A4

In your opinion, are there any types of biomass used for electricity, heating and cooling which should never be counted towards renewable energy targets for reasons of sustainability?

Yes, some types should not be counted

No, all types should be counted

If yes, please explain your choice and indicate the types of biomass that should be excluded, and the circumstances under which they should be excluded:

No biofuels should be excluded from the definition of renewable energy

PART B – Greenhouse gas methodology

To measure compliance, the design of the scheme has to ensure that the sustainability criteria can be applied to individual consignments of biomass. For instance, requirements related to minimum greenhouse gas emissions savings can be checked from an individual consignment of biomass, by determining the origin of the biomass and any greenhouse gas emissions incurred in its cultivation, production or transport (life-cycle analysis). To assess life-cycle emissions, we need techniques which can efficiently be applied to individual consignments of biomass.

Article 15(2) of the proposed RES Directive contains a criterion for minimum greenhouse gas savings for biofuels of 35% relative to the replaced fossil fuel (petrol or diesel), based on the data and methodology in the proposed Directive (see Annex VII of the proposed Directive)

Question B1

The RES Directive proposes a required minimum greenhouse gas (GHG) savings for transport fuels (biofuels) of 35%. The methodology for calculating GHG savings is set out in Annex VII of the RES Directive.

The European Commission is working to establish data to calculate life-cycle GHG emission figures for all types of biomass used for electricity and heating. The following types of biomass are being analysed: processed wood fuel (pellets, wood briquettes, wood chips, sawdust), black liquor, fuel wood, timber and forest residues, i.e. stems, tops, branches, leaves, stumps and coarse roots etc.

The final methodology chosen to calculate greenhouse gas savings will allow for setting a specific cut-off figure (such as 35% for biofuels). Assuming that the methodology is the same for all types of biomass, in your opinion, the level of ambition for minimum greenhouse gas savings of biomass for heating and electricity purposes

should be the same as for biofuels for transport

should be higher than for biofuels for transport

should be lower than for biofuels for transport

should not have requirements for minimum greenhouse gas savings

Please give reasons for your view:

The greenhouse gas savings for efficient use of solid biomass for heating and for bio-electricity produced in combined heat and power production is higher than in most applications of production of biofuels for transport today. The potential to increase greenhouse gas savings is however good also in production of liquid bio-fuels, for example by using straw or other biomass for energy. In the short term it is possible to set a higher savings target for heat and electricity production than for production of biofuels for transport. The reason for this is to stimulate combined heat and power generation and to stimulate efficient combustion equipment.

Question B2

GHG methodology for biofuels allocates zero emissions to cultivation or collection of certain biofuel feedstocks. Annex VII, point 16, third paragraph, states that "*wastes, agricultural crop residues, including straw, bagasse, husks, cobs and nut shells, and residues from processing chains, other than biofuel processing chains, with no potential food or feed use shall be considered to have zero life cycle greenhouse gas emissions up to the process of collection of these materials*".

Please indicate which bio-wastes and residues should (in a greenhouse gas methodology) be considered to have zero greenhouse gas emissions at the point of collection:

forestry harvesting residues (stems, tops, bark, branches, stumps, leaves and coarse roots)
forest-based produce such as fuel wood
wood-processing residues (sawdust, shavings, woodchips, wood briquettes and pellets)
agricultural/ crop residues (cereal straws, bagasse, husks, cobs, nut shells, grains)
recovered post-consumer wood
biodegradable fraction of municipal waste
other biodegradable fraction of industrial waste
animal manure
slurry
green waste
waste food
black liquor

Other (please list):

Please explain your choice(s):

All of the mentioned bio-wastes and residues should be considered zero life cycle greenhouse gas emissions.

We also believe that residues from biofuel production chains (for transport) should be considered having zero emissions. If residues are not used for energy they will decompose, and the carbon content will be released, either as carbon dioxide or as methane. This is true for all residues, even though the time span can vary.

For all of these biomasses there is small energy input for transport, sometimes chipping and other light processing. The greenhouse gas emission from these activities is seldom more than a couple of percent of the total greenhouse gas saving.

Question B3

The RES Directive also defines how to allocate greenhouse gas emissions to **co-products**, which are produced in processes and systems with multiple outputs (e.g. refineries, cogeneration of electricity and heat, production of rape meal as a co-product with biodiesel). The allocation of greenhouse gas emissions in the biofuels sustainability scheme is done by allocation based on 'energy' values of co-products.

It is important to assess whether this approach is also appropriate for biomass in general. Please indicate what you consider to be co-products of electricity and heating production using biomass and if there are any co-products produced during any part of the production chain (cultivation, processing and fuel in use) which cannot be accounted for in terms of 'energy-allocation'?

Please note that combined production in “combinates” will be used based on different kinds of biomasses, both from forestry, agriculture and waste. Such combined plants are planned at a number of locations in Sweden. They may produce electricity, liquid biofuels, gaseous biofuels, solid biofuels (e.g. pellets), electricity and heat, in different combinations. The production of liquid biofuels may be both of “first generation” and “second generation”. No fossil fuels will be used. The goal is to reach an optimal production mix, based on economy and to maximise the combined efficiency. It is not meaningful to talk about co-products or by-products in this case. All the different products are just products.

Question B4

The sustainability criteria also consider land-use issues.

Articles 15(3) and 15(4) of the proposed RES Directive define certain categories of land that cannot be used for the production of biofuels and other bioliquids, to protect biodiversity and to avoid conversion of high carbon stock land for biofuel feedstock production, as follows:

Biofuels shall not be made from raw material obtained from land with high biodiversity values:

- a) forest undisturbed by significant human activity, that is to say, forest where there has been no known significant human intervention or where the last significant human intervention was sufficiently long ago to have allowed the natural species composition and processes to have become re-established;
- b) areas designated for nature protection purposes, unless evidence is provided that the production of that raw material did not interfere with those purposes;
- c) highly biodiverse grassland, that is to say grassland that is species-rich, not fertilised and not degraded.

Biofuels should not count towards renewable energy targets or benefit from any support if the use of biofuels results in major reduction in carbon stocks through land use change, that is

- a) conversion of wetlands, that is to say land that is covered with or saturated by water permanently or for a significant part of the year, including pristine peatland
- b) conversion of 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*;

A possible approach would be to argue that such land requirements should be identical, regardless of the types of biomass under consideration and that they should therefore also be applied to biomass. Please indicate whether you would share this approach and if not why not.

Yes

No

Explanation:

These rules seem to be set up to guarantee against destruction of rain forest and other carbon rich lands in tropical areas that can be threatened by exploitation for production of raw materials for biofuels.

Applying them to European biomass production from forestry and agriculture can lead to great difficulties for our bioenergy industries, and we strongly advise against this approach.

We believe in a model of managed forestry and sustainable forest management, with room both for production and a rich natural life. The sustainability criteria developed in the MCPFE process is sufficient and well thought through. The points in the directive are not.

Some examples:

- a) The Nordic forests often have a life span of more than one hundred years before harvest, and no signs of significant human activity may be seen, although they are productive forests. This point would also make it impossible to import biomass from forests in Russia and Canada that are infested by insects and dying (consequently releasing carbon). It would also make it hard in general to expand forestry to new areas, and make it harder to use this renewable source of energy and raw materials.
- b) No problem – in many cases it is possible to produce biomass for energy also in protected areas as a part of a management programme.
- c) This could block the use of vast areas around the world that are well suited to production of biomass.

Land use change:

- a) Important that restrictions are only put on pristine peat lands. In Sweden we have very large areas of productive forest on drained peat lands (a couple of million hectares). There should be no general restriction against forest fuels from these peat lands.
- b) This point should definitely be excluded. If interpreted in a wrong way it could create great difficulties to our forestry. It would also make it impossible to convert low productive bush forest to more productive energy plantations (e.g. willows, poplars, hemp or reed canary grass). We have large areas of abandoned farmlands that could be used. Some of these are overgrown with low productive “forest”.

Question B5

The greenhouse gas methodology for calculating emission savings when using biofuels and bioliquids also takes into account land use issues, by penalising conversion of high-carbon stock land to lower carbon stock land. The penalties are based on data for carbon stock of

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certain land used for biofuel feedstock provisions on the basis of values provided by the International Panel on Climate Change (IPCC) as indicated below:

(table)

The wider use of biomass requires consideration of a broader range of feedstocks, including residues and bio-wastes. With IPCC data being valid mainly for land used by annual crops and forests, land used by feedstocks such as perennial grasses and short-rotation coppice may need to be added to the standard data list.

Please state which emission factors and calculation methods could be developed for perennial grasses and short rotation-coppice that are not covered by the above table:

We think that these IPCC data are meant to be used for general calculations of the climatic effects of different land uses, but that they can not be used as instruments for regulation in the manner proposed by the commission. For one thing they represent as very broad generalisation. In real life the production systems vary greatly depending on soils, water balance, nutritional status, climate, etc.

PART C – End use efficiency of biomass

Question C1

The greenhouse gas methodology developed for biofuels does not take into account the end use of the energy, because it was developed for road transport, where most vehicles have similar end-use efficiencies.

However biomass can be processed at very different efficiency levels in different applications such as very low efficiency burning in small open fires and very high efficiency burning in some large co-generation plants, where the useful heat is delivered through district heating.

Please indicate whether you think the end use efficiency of biomass in electricity, heating and cooling should be accounted for in a sustainability scheme and if so, how?

End-use efficiency should not be part of the sustainability scheme

End-use efficiency should be included in the greenhouse gas calculation methodology

A bonus should be granted for efficient uses of biomass in national support schemes

Inefficient uses of biomass should be banned

Penalties for inefficient uses of biomass, such as not counting towards renewable energy targets

Please explain your choice:

It is very important to stimulate high end use efficiency, but this is done primarily by using the right economic incentives, stimulating district heating and co-generation, etc.

Making end-use efficiency a requirement would lead to difficulties in several aspects: It would halt co-firing of biomass in coal powered condensing plants. It could lead to exclusion of traditional small-scale wood-burning, and possibly require a bureaucratic system to evaluate different kinds of small-scale wood-burning equipments.

Question C2

The Commission proposed in Article 12(5) of the RES Directive that Member States should promote biomass conversion technologies that achieve a conversion efficiency of at least 85% for residential and commercial applications and at least 70% for industrial applications.

Please comment on whether you agree with these efficiency thresholds:

We advice against using such “cut-off thresholds”. For one thing they tend to look at installations in a “black and white manner” and may punish installations that are very similar to others, but fail to reach the thresholds with a single percentage point.

If thresholds are used there is no reason to have lower thresholds for industry than for residential installations. The opposite should rather be the case.

Industrial installations are larger and have a potential for better efficiency.

D – Sustainable forest management

Forest biomass represent important sources of renewable energy that can reduce greenhouse gas emissions when they are used efficiently to replace fossil fuels and producing environmentally friendly products. Forests also provide habitats for a variety of animal and plant species (biodiversity) and serve economic and social functions. Substitution for fossil fuel is only one way in which forestry and the forest based industry contributes to the reduction of greenhouse gases. Other ways are through the carbon sink function of the forest, the sequestration of carbon in wood products and the substitution of energy intensive products.

Sustainable forest management has a long tradition in Europe and is the key objective of international processes, such as the Ministerial Conference on the Protection of Forests in Europe (MCPFE) and the United Nations Forum on Forests.

Sustainable forest management is defined by MCPFE as: *The stewardship and use of forests and forest lands in a way and at a rate that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national and global levels, and that does not cause damage to other ecosystems.*

Sustainable forest management aims at producing an annual sustained yield of timber, fibre for energy while maintaining or increasing forest carbon stocks and other social and ecological benefits. Inside the EU, sustainable forest management practices and the enlargement of the forest area have resulted in increased availability of forest resources and expanded carbon stocks in the forest.

Wood can be used for several different purposes: either for energy, or as raw materials for pulp and paper production, construction, chemical industry and furniture or panel making etc.

Woody biomass from forests for energy generation besides traditional fuel wood often comes as a by-product of harvesting in forests for timber (bark, tops, branches, stumps, roots) or

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from first thinning. The other important sources of wood for energy are wood residues from wood processing (sawdust, chips) and post consumer recovered wood.

Therefore, it could be justified not to require sustainable forest management criteria simply to

be applied to energy uses of biomass, because much of the biomass used for energy comes as by-product from other harvesting or industrial processes. Due to such integrated production it may also be questionable that sustainable forestry criteria can be developed for energy uses of wood only.

Moreover, as forests are managed not only to provide wood for energy purposes but for other purposes too, it is likely that any criteria developed for use of wood for bioenergy, may lead to the application of sustainability criteria for the use of wood for other purposes, and it is not the objective of this consultation to consider sustainability criteria for non-energy uses of wood.

Question D1

Taking the above into account, in your opinion, should sustainable forest management criteria for forest biomass for energy purposes be developed?

Yes

No

Please explain your response:

We think that existing systems should be used, like the MCPFE. If improvement and development of this system is needed for biomass for energy that should be done.

To develop a separate system of forest management criteria for biomass for energy would mean an unnecessary double system.

The same trees from the same forest management system are used both for timber, pulp wood and for biomass for energy.

Question D2

If the EU decides to develop sustainable forest management criteria, a common understanding is needed with common criteria.

The European Community is committed to sustainable forest management (SFM) through several international processes, including the Ministerial Conference on the Protection of Forests in Europe (MCPFE), which led to the development of sustainable forest management principles and indicators (to help governments report on sustainable forest management).

The Pan-European Operational Level Guidelines for Sustainable Forest Management, as endorsed by the Lisbon Ministerial Conference on the Protection of Forests in Europe (2 to 4 June 1998) and improved by the MCPFE expert level meeting in Vienna in October 2002, are based on the following principles/ indicators:

- a) Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles (such as maintenance and enhancement of forest area, forest per capita, maintenance of age structure and / or diameter distribution and carbon stock)
- b) Maintenance of Forest Ecosystem Health and Vitality (such as control of deposition of air pollutants, maintenance of soil conditions)
- c) Maintenance and Encouragement of Productive Functions of Forests - Wood and Non-Wood (such as balance between net annual increment and annual felling of wood, quantity of marketed roundwood and non-wood goods)

d) Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems (such as maintenance of tree species composition, maintenance of
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share of natural regeneration and share of planting and seeding and maintenance of naturalness of forest, protection of threatened forest species

e) Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water i.e. prevent erosion and protect water supplies

f) Maintenance of Other Socio-Economic Functions and Conditions (such as contribution of forest sector to GDP and existence of occupational safety and health requirements and accessibility for recreation and maintenance of cultural and spiritual values

The six principles from the MCPFE are insufficiently precise to serve as clear criteria, and as a result, the application of these principles varies from region to region. In contrast, the sustainability scheme for biofuels and other bioliquids includes very precise criteria, which is to prohibit the use of raw material from undisturbed/ primary forests (i.e. highly biodiverse forests), but the biofuel/ bioliquid scheme does not say anything about harvesting from other types of forests.

Today, the most common way to apply the principles of MCPFE is through certification schemes, which today all work on a voluntary basis and include the Programme for the Endorsement of Forest Certification (PEFC), the Forest Stewardship Council (FSC), the American Tree Farm system, Malaysian Timber Certification Council and the Dutch Keurhout and the majority of the forests certified through these schemes are either in Europe or North America.

In view of this, please indicate options for precise and measurable criteria for sustainable forestry which could be applied globally and which would comply with the MCPFE principles:

The development of certification schemes for forestry globally is a process that will take time. The principles adopted in the MCPFE process are a good basis for continued work. They include precise and measurable criteria that have been agreed on by many stake-holders.

Question D3

These six MCPFE criteria presented in Question D2 are currently implemented through market based voluntary certification initiatives. There are other options which can be considered. Please choose one option:

To develop harmonised operational common sustainability criteria to be applied to all forests (globally) and to ensure that only biomass which comes from sustainably managed forests should count towards renewable energy targets. This would warrant the development of common sustainability criteria, and proof of compliance could be through certification or through other methods, such as bilateral agreements etc.

EU could develop minimum requirements for forest certification schemes on the basis of which forest certification schemes would be accredited and the certificate would be the only possible proof of compliance.

EU should not take action on sustainable forestry for energy purposes, but instead promote the already existing voluntary schemes globally.

EU should require Member States to develop long-term, e.g. 10 year period, planning tools for sustainable forest management for forest in their own territory (this would exclude any requirements for non-EU forest)

Please explain your choice and how your choice could best be applied in practice, paying particular attention to countries where there are no existing schemes for SFM:

Although the first point, to develop harmonised operational sustainability criteria to be applied to all forests globally would be an ideal solution, this is a tremendous task that would hamper the development of the industry and the trade in solid biofuels. In the short time frame we instead favour a system promoting existing voluntary schemes.

E – Verification

It will be necessary to verify compliance of claims about sustainability of biomass. Please indicate any instruments/ standards or schemes which could be used to verify compliance:

The verification can be done by appropriate national authorities.