



A NEW EU SUSTAINABLE BIOENERGY POLICY

**Proposal to regulate bioenergy
production and use in the EU's renewable
energy policy framework 2020 - 2030**

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INTRODUCTION

The European Commission has announced that it will propose a new and improved bioenergy sustainability policy for the use of biomass in heating, electricity and transport as part of its Climate and Energy Package for 2030. The proposal is expected to be released before the end of 2016.

While bioenergy will play a vital role in EU's transition to an energy system based entirely on renewable energy, it will be small relative to the contribution of other renewables and energy efficiency. This is because there are limits to the extent to which bioenergy can be used sustainably. It is therefore important to ensure that these limited sustainable bioenergy resources are preferentially used where no better renewable energy alternatives exist.

To ensure bioenergy is genuinely sustainable comprehensive safeguards need to be introduced which check that bioenergy is truly low carbon, resource efficient and avoids negative consequences on biodiversity, soil, water, land use and people.

While efforts are needed to ensure that all areas of natural resource production and consumption are sustainable and produce less carbon emissions – whether in agriculture, food consumption, forestry, land tenure or transport -this paper however focuses on concerns related to the EU's growing bioenergy use, which is being driven by EU climate and energy policies. It focuses on the practicalities of implementing the following sustainability safeguards in all energy uses of biomass, including electricity, heating and transport¹:

- › A limit to the use of biomass for energy production to levels that can be sustainably supplied;
- › An efficient and optimal use of biomass resources, in line with the principle of cascading use;
- › Robust and verifiable emission savings on the basis of correct carbon accounting for bioenergy emissions;
- › A comprehensive, binding set of environmental and social sustainability criteria.

The proposals consider quantity and quality to ensure sustainability. They outline the types of biomass that could be used for energy and indicate the biomass uses that should be prioritized. If taken on board, the proposals will ensure the sustainable production, sourcing and use of biomass for energy.

However, it should be noted that the sustainability criteria proposed in this paper only relate to biomass grown on land (including forested land) and to residues, waste and side-products. Sustainability issues related to biomass from aquaculture and marine areas are not considered as these resources are currently not expected to contribute significantly to the 2030 renewable energy targets. If this changes, the Commission should develop and introduce additional safeguards.

HOW TO ENSURE BIOENERGY IS SUSTAINABLE

SUSTAINABLE LEVEL OF BIOMASS CONSUMPTION

The impact and scale of bioenergy production are strongly correlated due to the limited availability of biomass sources that have low environmental and social impacts. To reduce the EU's overall resource use and to uphold all the needed sustainability safeguards, the overall amount of biomass used for energy production should be limited (see Criterion 1). The needs of other sectors should also be taken into account when estimating availability of biomass for energy use.

REAL CARBON EMISSION REDUCTIONS

The use of bioenergy can cause significant direct and indirect carbon emissions. EU policy must therefore include guarantees to ensure that bioenergy use results in robust and verifiable greenhouse gas savings. Regrettably, the current EU and international policy frameworks are not fit for this purpose. For instance, the EU Life Cycle Assessment methodologies still exclude important categories of emissions, e.g. from the land

use sector. Many countries also exclude the land use sector from their carbon accounting, while others include such emissions but measure them in a way that does not capture all emissions, especially from forest management². Given that the rise in bioenergy use is driven by both badly designed carbon accounting frameworks and policies promoting renewable energy, additional safeguards are needed in *both* policies to ensure that bioenergy significantly³ reduces greenhouse gas emissions.

A new approach to bioenergy policy is therefore needed. Research to identify emissions released from each source of bioenergy has made it possible to differentiate between low and high risk sources⁴. Biomass sources should be given a "risk rating" based on the best available science on the modelling and accounting of bioenergy emissions. Sources identified as high risk should be excluded.

High risk sources include crops from agricultural land (risk of emissions from indirect land use change), additional round



wood harvests or stumps (risk of creating carbon debt and depleting carbon stocks) and biomass that would cause significant displacement of existing material uses. Other biomass sources such as certain harvesting residues may be considered 'medium-risk' and should only be used under restrictions. The excessive removal of harvesting residues, for instance, tends to deplete soil carbon (see Criterion 2). In addition, adequate carbon accounting is essential for all sectors in the different EU climate frameworks, including the land sector, to ensure robust carbon savings are achieved and reduction targets are met.

RESOURCE EFFICIENCY

As sustainable biomass resources are limited, it is important that they are used in an optimal and efficient way. EU policies should therefore secure both energy and resource efficiency. Energy installations using biomass should meet minimum conversion efficiency requirements, promoting combined production of heat and power over electricity-only installations. New EU policies should also exclude high value

biomass sources that can still serve other, more sustainable uses. For example round wood if used to produce lasting materials or products rather than energy will store carbon with long term benefits for climate. Energy policies should promote and not undermine the implementation of the waste hierarchy, so as to ensure that bioenergy use is in line with the aims of the circular economy (see Criteria 5 and 6).

SOCIAL AND ENVIRONMENTAL SUSTAINABILITY

EU policies should also set out binding sustainability criteria for the production of bioenergy feedstocks to prevent negative social impacts and to secure the rights of affected individuals and communities (see Criterion 4). Demand for biomass should be limited to protect biodiversity, soil and ecosystems, to reduce the pressures on forests and land caused by increasing rates of extraction (see Criterion 1). Measures are also needed to control invasive alien species, to ensure appropriate management of protected areas and to limit the extraction rate of forest and agricultural residues (see Criterion 2).

PROPOSAL FOR A SUSTAINABLE BIOENERGY POLICY

For bioenergy to be accounted towards the EU's 2030 renewable energy target and to be eligible for financial support, its use and production should meet the criteria listed below, irrespective of whether the raw materials are sourced within or outside the EU. The EU should avoid relying on biomass imports for energy production⁵ as part of its efforts to reduce its overall global resource footprint⁶. Building on the 2015 review of the Renewable Energy Directive, the new bioenergy sustainability policy should require Member States to take measures to ensure that an EU wide limit on bioenergy use is not exceeded and require economic operators to show compliance with sustainability requirements. Economic operators could be defined depending on the bioenergy production chain either as

- › in the Commission guidance on the practical implementation of the existing biofuels sustainability criteria in the case of fuels and liquids⁷, or
- › operators of energy installations above a minimum capacity threshold, or
- › fuel suppliers for installations below this threshold.

1 THERE SHOULD BE AN OVERALL LIMIT ON THE AMOUNT OF BIOENERGY USED TO MEET 2030 TARGETS

The EU should introduce an EU wide limit on the amount of bioenergy that can be incentivised and counted towards the EU wide 2030 renewable energy and climate targets. The limit should be introduced and implemented in a way that is coherent with the implementation of the EU's renewable energy target. This limit should be expressed as the amount of energy (e.g. million tons of oil equivalent or, exajoules) rather than a percentage of energy consumed, which would be dependent on the level of overall energy demand. Current research⁸ shows that a sustainable level of supply of biomass for energy in 2030 is close to the projected level of bioenergy use in 2020.

As part of this overall limit on bioenergy, the existing 7% limit on the share of biofuels in transport made from food and energy crops should be lowered⁹ to ensure that these biofuels are phased out as soon as possible and no later than 2030. This will require that all direct and indirect support (state aid, tax



incentives, incorporation obligations and other mandates) for food based biofuels be terminated after 2020 without delay. Member States should be required to submit a credible, independent assessment of the regional availability of biomass sources as part of their Energy and Climate planning and to limit the use at levels that are sustainable for the respective region. These assessments should take into account nature conservation objectives and other uses of biomass to determine the extent to which biomass can be used towards renewable energy targets.

2 BIOENERGY SHOULD NOT BE PRODUCED FROM THE FOLLOWING HIGH RISK SOURCES OF BIOMASS

Based on research and practical experience, the following sources of biomass have been identified as high risk in terms of environmental impact, carbon emissions and inefficient resource use. Consequently, the use of these biomass sources for energy should not count towards the 2030 EU's renewable energy target nor should they

be eligible for financial support unless credible, independent evidence shows that undesirable impacts will be avoided. Careful consideration and research is particularly needed to identify areas or categories of land in Europe where certain types of energy crops could be grown.

a. Biomass from areas designated for nature protection

Nature protection areas are designated by relevant competent authorities. Use of biomass from such areas can be allowed in exceptional circumstances when evidence is provided by the economic operator that biomass harvesting is part of a management plan that has been approved by the relevant authorities and that the biomass is being harvested to improve or maintain nature conservation values and objectives.

b. Crops from agricultural land

The amount of crops (defined in terms of their energy content/calorific value) grown on agricultural land and used for energy, whether as biofuels, biogas or solid biomass,



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should not increase after 2020. The use of these crops should be phased out by 2030 at the latest so that the land can be used for purposes that have higher environmental, social and economic benefits.

Use of energy crops for bioenergy could be allowed in exceptional circumstances where strong evidence is provided by the economic operator that the crops are being grown on unused land¹⁰ and that its use for energy does not cause direct or indirect land use change (ILUC), displacement of other material uses of biomass and does not lead to significant loss of biodiversity, soil degradation or water pollution.

c. Stumps and roundwood

Use of roundwood with greater than 10 cm diameter, and stumps taken directly from forests should not be allowed, except when strong evidence is provided by the economic operator that the wood is from a forest where the primary purpose of the harvest is nature conservation and biodiversity enhancement.

d. Invasive alien species grown to supply bioenergy

Any non-native species known to be potentially invasive cannot be planted for bioenergy use but can be harvested and used as part of a management/eradication plan for that specific invasive species.

e. Biomass from land with high biodiversity value or high carbon stock

Use of biomass from land with high biodiversity value, high carbon stock or from peatlands, as in the Renewable Energy Directive (2009/28/EC) Article 17 (3-5), should not be allowed.

Areas with high biodiversity value are areas that had primary forest status in 2008, areas designated for the protection of rare, endangered or threatened ecosystems and species, and highly biodiverse grasslands as defined in the Renewable Energy Directive¹¹.

Land with high carbon stocks are areas that in 2008 had the status of a wetland, forest or peatland, referring to previously undrained peatland¹².



3 SOIL, WATER AND BIODIVERSITY SHOULD BE PROTECTED DURING THE HARVESTING OF AGRICULTURAL AND FORESTRY RESIDUES FOR BIOENERGY

When agricultural and forestry residues are collected for bioenergy, a sufficient amount of the residue should be left on the ground. Other measures should also be taken to prevent potential negative impacts that residue removal may have on carbon stocks, soil and water quality, and biodiversity. The amount of collected residues and other protective measures should be determined on the basis of a regional or local impact assessment. The impact assessment should take into consideration other potential uses of those residues, impacts on soil and water quality, the amount of deadwood and the nutrient balance and carbon stocks of the soil.

4 PRODUCTION AND USE OF ALL BIOMASS SOURCES FOR ENERGY SHOULD RESPECT RIGHTS TO LAND TENURE, FREE PRIOR AND INFORMED CONSENT OF AFFECTED COMMUNITIES, FOOD SECURITY AND HUMAN AND LABOUR RIGHTS

The current reporting obligations of the Renewable Energy Directive related to social sustainability¹³ should be expanded and included in the binding sustainability criteria. These criteria should be consistent with relevant international standards, in particular the UN Voluntary Guidelines on the Responsible Governance of Tenure of Land, Fisheries and Forests in the Context of National Food Security, the right to food as enshrined in Article 11 of the International Covenant on Economic, Social and Cultural Rights, relevant International Labour Organisation (ILO) conventions and the United Nations Guiding Principles on Business and Human Rights.

a. Respect for local community access and control over natural resources

Economic operators should provide evidence that throughout the entire supply chain they and their suppliers:

- › Do not operate on contested land.
- › Do not diminish the legal, customary or user rights of other users of the biomass or land resources without their Free,



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Prior and Informed Consent (FPIC). Evidence of the FPIC of all potentially affected communities through the entire lifecycle of the bioenergy project should be provided. FPIC should be obtained in accordance with existing international standards and best practices.

- › Comply with the Applicable Laws and Regulations in the country concerned.

b. Protect food security

As part of their due diligence obligation, economic operators should ensure independent monitoring of the impact of their operations on food security in areas where the biomass is being sourced. Impacts on food security should be assessed, including availability, access, prices, utilization/adequacy and stability. The use of bioenergy, for which the impact assessment points to an erosion of food security, should not be allowed.

c. No systematic violation of human and labour rights

Economic operators should be required to demonstrate due diligence to ensure that

their and their suppliers' operations do not violate human or labour rights as enshrined in the eight fundamental ILO conventions currently covered by the reporting obligations of Article 17(7) of the Renewable Energy Directive (i.e. exclusion of forced and child labor, freedom of association and right to bargain collectively, right to equal pay) and of ILO Convention 169 concerning Indigenous and Tribal Peoples in Independent Countries.

5 USE OF BIOMASS FOR ENERGY SHOULD NOT CAUSE DISPLACEMENT OF OTHER USES OF BIOMASS AND BE IN LINE WITH THE PRINCIPLES OF CASCADING USE AND THE WASTE HIERARCHY

a. Energy use should not displace other uses of biomass

Economic operators should provide an independent assessment of other potential uses of the biomass resources they intend to use. They should also provide evidence that they will not displace these uses and that their use of biomass is in line with



the cascading use principle. Cascading use of biomass ensures that it is used in a chronological sequence of steps. This means that materials are used as long, often and as efficiently as possible and energy only recovered at the end of the cycle¹⁴.

b. Use of waste based biomass is in line with the waste hierarchy

Use of organic waste as an energy source is allowed only when the Member State has implemented the targets (art 11) and hierarchy (art 4) of the Waste Framework Directive (2008/98/EC)¹⁵.

c. Waste based biomass is separated from other sources of waste

Organic waste should be used as renewable energy only if it is used as a separated feedstock, i.e., not when burned as part of mixed waste incineration. Separate collection allows for easier and safer re-use of the biowaste.

This criterion does not apply to the use of landfill gases or anaerobic digestion from waste water treatment to produce energy.

6 BIOENERGY SHOULD ONLY BE PRODUCED IN THE MOST EFFICIENT APPLICATIONS

Biomass should only be burned in installations with an energy conversion efficiency (from primary energy to final energy output, for both electricity and thermal energy production combined) of at least 85% for residential and commercial applications and at least 70% for industrial applications. This threshold excludes co-firing of biomass in coal plants and biomass electricity-only plants.

For biofuels, specifically to ensure the most efficient fuel manufacturing, the efficiency criteria should be based on a life cycle assessment (LCA) of the carbon dioxide emission savings¹⁶.



VERIFICATION OF COMPLIANCE AND REPORTING

If voluntary certification schemes are used to help **relevant authorities** monitor compliance with sustainability criteria, their reliability must be ensured. Biofuels certification schemes currently recognised by the Commission are of variable quality due to the lack of requirements for these schemes. Consequently, operators have used weaker (and cheaper) schemes, which leads to a race to the bottom rather than promotion of best practices¹⁷.

In order to promote best practices, the **European Commission should adopt more detailed and ambitious requirements for the recognition of schemes**, particularly in respect to their organisational and governance structure. Other issues which need to be addressed

include: stakeholder participation, transparency, grievance mechanisms, public reporting, non-compliance, audit requirements, accreditation of certification bodies, monitoring and evaluation, and conflicts of interest.

Group certification should only be allowed for smallholders of land and cooperatives, and only when a robust internal control system is in place. It should be mandatory to put in place on-site audits and independent monitoring of impacts based on transparent indicators and benchmarks.

Independent of any certification schemes, the relevant national authorities should provide sufficient oversight and monitoring to safeguard local and national conditions.



The reporting obligations of Member States, as defined by Article 22 of the Renewable Energy Directive should be maintained. Where they currently only apply to biofuels, they should be expanded to cover all forms of bioenergy. Member States should be required to provide more detailed reporting on biomass energy sources used, including feedstocks (such as harvesting residues, thinnings for forests, and industrial waste), sourcing, origin and amount used.

The reporting obligations of the European Commission, as defined by Article 23 of the Renewable Energy Directive, should also be maintained. Where they currently only apply to biofuels they should be expanded to cover all forms of bioenergy. The Commission should monitor and re-

port on emissions arising from bioenergy including from direct and indirect land use change; changes in the carbon stocks of forests and other ecosystems; due to the delay of re-sequestration of carbon; and life cycle assessment emissions from processing and manufacturing. The Commission should also monitor and report on the impacts on cascading and resource efficient use of biomass.

Finally, the Commission should also assess whether the measures taken to ensure carbon emission savings, cascading and efficient use of biomass and prevention of negative environmental and social impacts of bioenergy production and use are sufficient. If appropriate, corrective legislative action should be proposed.

Footnotes

- ¹ European NGOs have outlined their concerns related to the EU's growing bioenergy use and called for the introduction sustainability safeguards in *Pitfalls and Potentials: The role of bioenergy in the EU climate and energy policy post 2020*.
- ² See for example Chatham House Working Paper, November 2015: Forest-based biomass energy accounting under the UNFCCC: finding the 'missing' carbon emissions.
- ³ See also NGO Briefing: *Why LULUCF cannot ensure that bioenergy reduces emissions*, July 2016.
- ⁴ For example *Matthews et al. 2015, Carbon impacts of biomass consumed in the EU: quantitative assessment; Matthews et al. 2014, Review of literature on biogenic carbon and life cycle assessment of forest bioenergy; Ecofys 2015, The land use change impact of biofuels consumed in the EU; Stephenson & MacKay 2014, Life Cycle Impacts of Biomass Electricity in 2020; Manomet Center for Conservation Sciences 2010, Biomass Sustainability and Carbon Policy Study*.
- ⁵ *Greenpeace Energy [R]evolution 2015* reports shows that Europe can meet its bioenergy needs without significantly increasing its global resource use.
- ⁶ See for example: *Briefing: the four footprints*, Friends of the Earth Europe 2014.
- ⁷ *Communication from the Commission on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels, 2010*.
- ⁸ Considering figures of sustainable biomass potentials (from studies such as *European Climate Foundation 2014, Wasted – Europe's untapped resource; IEEP 2014, Space for Energy crops*) the total volume could roughly correspond with the use of all bioenergy in Mtoe in 2020 as projected by the Member States.
- ⁹ *Directive (EU) 2015/1513 of 9 September 2015* that among other things defined food based biofuels as biofuels produced from cereal and other starch-rich crops, sugars and oil crops and from crops grown as main crops primarily for energy purposes on agricultural land.
- ¹⁰ Study by *the IEEP, Space for Energy Crops (2015)* identified examples of the kind land that can be consider to be unused and to meet with other requirements for sustainable land use in the European Union. These conditions would however not be sufficient to ensure sustainable land use outside of the EU.
- ¹¹ *(2009/28/EC) Article 17 (3)*.
- ¹² Previously undrained peatland includes 1) deeper peat layers under previously drained peat (i.e. vertical dimension), and 2) patches of undrained peat soil in the peatland landscape. The vertical soil profile is often overlooked. Even in previously drained peatlands, continued drainage-based cultivation will lead to subsidence due to peat carbon oxidation and will thus in time necessitate the deepening of the drainage system. Peatlands should be treated as habitats with high climate mitigation potential.
- ¹³ See article 17(7): "The Commission shall, every two years, report 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, on the impact of Community 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:" and "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."
- ¹⁴ *WWF & Mondi 2016, Mapping study on cascading use of wood products*.
- ¹⁵ Article 4 of the Waste Framework Directive defines the waste hierarchy as follows: "The following waste hierarchy shall apply as a priority order in waste prevention and management legislation and policy: (a) prevention; (b) preparing for re-use; (c) recycling; (d) other recovery, e.g. energy recovery; and (e) disposal. When applying the waste hierarchy referred to in paragraph 1, Member States shall take measures to encourage the options that deliver the best overall environmental outcome. This may require specific waste streams departing from the hierarchy where this is justified by life-cycle thinking on the overall impacts of the generation and management of such waste."
- ¹⁶ The current life cycle assessment methodology for CO₂ emissions of biofuels in the RED focuses only on emissions of the cultivation, processing, transportation and distribution of the fuel. This should be changed to include the emissions related to land use.
- ¹⁷ See for example: *WWF 2013, Searching for Sustainability, ClientEarth 2013, Biofuels – Driving best practice in voluntary certification*

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