

CHAPTER 3

WOOD BIOMASS SUSTAINABILITY UNDER THE RENEWABLE ENERGY DIRECTIVE

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1. INTRODUCTION

Preventing dangerous climate change (CC) is a strategic priority for the European Union (EU).¹ Contemporary scientific evidence makes it clear: the recent CC is mainly caused by the persistent increase in anthropogenic greenhouse gases (GHG) concentrations in the atmosphere.² Such gases are primarily released by burning of fossil fuels, namely, oil, coal and natural gas. Although they are non-renewable, take millions of years to form and reserves are being depleted much faster than new ones appear, fossil fuels remain the most important energy source worldwide and in the European Union (EU).³

In order to cut its GHG emissions, the EU adopted the Climate and Energy Package in 2009.⁴ It is a set of mostly binding laws, which aims to ensure the Union meets its climate and energy targets for 2020. These targets include: a 20 per cent reduction in GHG emissions; a 20 per cent improvement in energy efficiency; and a 20 per cent share of energy produced from renewable resources. By achieving the latter objective, the EU will not only substitute fossil fuels with renewable energy, improve the security of the energy supply, and reduce its GHG emissions, but also contribute to the 20 per cent energy efficiency target through technological development and innovation.⁵ However, in the long run, policies, promoting greater use of

¹ European Commission, 'EU Action on Climate' available at <http://ec.europa.eu/clima/policies/brief/eu/>.

² 'Summary for Policy Makers' in TF Stocker et al (eds), *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge University Press 2013) 15.

³ EU-27 primary energy production in 2010 accounted for 19.6% from solid fuels, largely coal, 18.8% from natural gas, and 11.7% from crude oil. These figures are in general comparable with the overall world statistics: in 2011 fossil fuels constituted 81.6% of the total primary energy supply in the world (oil fuel accounted for 31.5%, coal and peat accounted for 28.8% and natural gas accounted for 21.3%). Globally fossil fuels have been the most important primary energy sources since 1973. For more information see, European Commission, Eurostat, Energy Production and Imports// <
http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_production_and_imports>, last viewed 20.11.2013; International Energy Agency (IEA), Key World Energy Statistics, 2013, p. 6.

⁴ For more information on the package and on EU Climate Law, see K Kulovesi, E Morega and M Munoz, 'Environmental Integration and Multi-Faceted International Dimensions of EU Law: Unpacking the EU's Climate and Energy Package' (2011) 48 *Common Market Law Review* 829; European Commission, 'The 2020 Climate and Energy Package' available at <http://ec.europa.eu/clima/policies/package/>.

⁵ 'The development of energy from renewable sources should be closely linked to increased energy efficiency'. Thus, the development of energy from renewable sources should contribute to the energy efficiency target through advanced technologies. See recital 5 to Directive 2009/28/EC of the European Parliament and of the

CHAPTER 3 – WOOD BIOMASS SUSTAINABILITY UNDER THE RENEWABLE ENERGY DIRECTIVE

renewable energy, may also result in unintended negative environmental impact causing *inter alia* a rapid growth in the use of wood in the EU and in the third-party countries (non-EU countries).

Current annual world deforestation is already alarmingly high, estimated at 5.2 million hectares a year;⁶ roughly equal to the area of Costa Rica.⁷ If the world's net forest area continues to decline at the present pace, it will take 775 years to lose all forests on Earth.⁸ Nevertheless, as the Food and Agriculture Organization of the United Nations (FAO) predicts, the global demand for wood will continue to increase significantly in the coming years. Demographic changes, economic growth, and environmental policies will be decisive in the long-term demand for wood products. However, the rapid growth in the use of wood as a source of energy is expected to be the most dramatic change.⁹ Some estimates expect a nearly six-fold increase in the world demand for fuel wood by 2060.¹⁰ As a result of policies promoting greater use of renewable energy, the growth in the demand for fuel wood will be particularly significant in Europe.¹¹

The biggest factor driving renewable energy use in the EU until 2020 is the RED.¹² Whereas in 2002 renewable energy sources provided about 6 per cent of total energy requirements in the 25 countries of the EU,¹³ the RED sets a mandatory target for the 27 Member States (MS) to increase their share of renewable energy to 20 per cent of the EU's primary energy consumption by 2020.¹⁴ The RED also obliges MS to increase renewable energy used by the transportation sector to – 'at least' – 10 per cent by 2020.¹⁵ In comparison, the total EU liquid biofuel consumption constituted less than 1 per cent of total EU petrol consumption in 2004.¹⁶

Thus, the RED 2020 target promotes a tremendous increase in renewable energy consumption in comparison with previous years. While wood (biomass) is the leading renewable energy re-

Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC [2009] OJ L140/16 (RED).

⁶ *Global Forest Resources Assessment, Main Report* (Food and Agriculture Organization of the United Nations (FAO), Forestry Paper 163, 2010) 17.

⁷ *Ibid.*

⁸ *State of the World's Forests* (Food and Agriculture Organization of the United Nations 2012) 16.

⁹ *State of the World's Forests* (Food and Agriculture Organization of the United Nations 2009) ix.

¹⁰ R Raunekar et al, 'Global Outlook for Wood and Forests with the Bioenergy Demand Implied by Scenarios of the Intergovernmental Panel on Climate Change' (2010) 12 *Forest Policy and Economics* 48.

¹¹ *State of the World's Forests* (FAO 2009) ix.

¹² There are other examples of regulating renewable energy use in the EU. For instance, biofuels, as a source of renewable energy, are also regulated by Directive 2009/30/EC of the EU Parliament and of the Council of 23 April 2009 of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC [2009] OJ L140/88. The discussion in this article is focused on RED particularly.

¹³ European Commission, *Biomass. Green Energy for Europe* (Office for Official Publications of the European Communities 2005) 7.

¹⁴ For the definitions 'biomass', 'bioliquids' and 'biofuels' see Art 2 RES Directive. For the mandatory targets see Art 3.1.

¹⁵ *Ibid* Art 3.4.

¹⁶ European Commission, *Biomass*, 34.

source in the EU (and also universally),¹⁷ the European Commission highlights, the binding 2020 energy target should be met ‘without leading to deforestation, forest degradation or higher GHG emissions’.¹⁸ The challenge is to provide a legal framework for this target.

Firstly, this article studies the role of wood biomass as a source of renewable energy in the EU and the potential sustainability risks associated with the rapid growth in the use of wood stimulated by the RED. Secondly, the article discusses the RED’s sustainability criteria and their applicability to wood biomass. Thirdly, the article analyzes the current legal framework for forest management that is referred to by the European Commission as ‘enough to provide assurances for sustainable production of biomass’.¹⁹ Finally, the article argues that – under the current regulatory approach environmental risks exist, which are associated with the increased use of wood biomass – and calls for further investigation and advancement of the current legal framework in order to ensure wood biomass sustainability.

2. THE RELATIONSHIP BETWEEN FOREST AND BIOFUELS

2.1. Wood biomass as a source of energy

For the purpose of the Renewable Energy Directive it is specified, that energy from renewable sources means energy from non-fossil sources which include biomass, wind, solar, etc.²⁰ The largest contributor of renewable energy to the EU energy system is biomass.²¹ It is also expected to provide a major share (57 per cent) of the renewable energy consumption at the European level in 2020.²² Under the Renewable Energy Directive, biomass refers to ‘biodegradable fraction of products, waste and residues from biological origin from agriculture,

¹⁷ Wood provides over 9% of the global total primary energy supply. World-wide wood energy is as important as all other renewable energy sources altogether (hydro, geothermal, wastes, biogas, solar and liquid biofuels). See <http://www.fao.org/forestry/energy/en/>.

¹⁸ European Commission, ‘Commission Staff Working Document. Impact Assessment. Accompanying document to the Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling’ SEC(2010) 65 final, 53.

¹⁹ European Commission, ‘Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling’ (‘EU Biomass Report’) COM(2010) 11 final, 2–3.

²⁰ Art 2(a) RED.

²¹ In 2011 biomass accounted for 68% of the gross inland energy consumption of renewables within the EU-28. Other renewable energy sources included hydro power (15.8%); wind power (9.1%); geothermal energy (3.7%); solar energy (3.6%). For more information see Eurostat, *Agriculture, Forestry and Fishery Statistics, 2013 Edition* (Publications Office of the European Union 2013) 197; C Panoutsou, ‘Main Outcomes of Work Package 2 for Policy Makers. Which Market Segments are the Most Promising in the EU 27 for Future Biomass Integration by 2020?’ (Biomass Futures 2011) 4.

²² UR Fritsche et al, ‘Outcome Paper, Sustainability Criteria and Indicators for Solid Bioenergy from Forests’, based on the Joint Workshop on Extending the RED Sustainability Requirements to Solid Bioenergy (December 2012) 1.

forestry and related industries [...] as well as biodegradable fraction of industrial and municipal waste'.²³

The leading biomass energy resource in the EU is wood. In 2011 wood and wood waste accounted for 4.8 per cent of the total energy consumed within the EU-28;²⁴ for almost half (47.8 per cent) of the total renewables for energy purposes consumption;²⁵ and for over two thirds (70.3 per cent) of the total biomass and waste.²⁶ The share of wood and wood waste in total gross inland energy consumption ranged from over 20 per cent in Latvia and Finland, down to less than 1 per cent in Luxemburg, Cyprus and Malta.²⁷ Apart from forest products, biomass resources also originate from agriculture and waste, however, on a much smaller scale.²⁸

Each renewable energy resource has specific properties, uses and advantages. In order to produce heat, biomass can be used directly through combustion. Wood, for instance, is most often used directly as a fuel through straightforward combustion.²⁹ Being a solid biofuel, wood can be used in its various raw material forms: logs, stems, stumps, needles and leaves from forests; bark, sawdust and redundant cuttings from sawmills; chips and slabs from the wood industry; and recycled wood from demolition. Alternatively, the raw material can be processed into forms that allow for easy transport, storage and combustion, such as chips, pellets, briquettes and powder. The most economical way of converting biomass into fuel is wood pellets, made from dried sawdust, shavings or wood powder.³⁰

In order to be used for transport, or other energy purposes, including electricity, heating and cooling, biomass can be converted to biofuels or bioliquids, ie liquid or gaseous fuels.³¹ At present the share of biofuels in the renewable energy production is very modest; it accounts for only 11, 2 per cent of the total biomass and waste.³² The major market for liquid biofuels is in the transport sector³³ with biodiesel and bioethanol accounting for 70 per cent and 28 per cent of the market share respectively.³⁴ Contemporary first generation or conventional liquid biofuels are derived mostly from agricultural resources such as cereals, sugar beets, rapeseed,

²³ Art 2(e) RED.

²⁴ Eurostat, *Agriculture, Forestry and Fishery Statistics, 2013 Edition*, 198.

²⁵ Ibid 197.

²⁶ Ibid.

²⁷ In 2010 Finland reported that just over two-thirds (77%) of its land area is covered by forests and other wooded land. In the Republic of Latvia forests cover more than half (54%) of the country's land area. Grand Duchy of Luxemburg and Republic of Cyprus have forests and other wooded areas on less than 10 % of their total land areas. Republic of Malta reports zero forests in the country. See *ibid* 191, 198.

²⁸ Whereas wood and wood waste account for over two thirds of the total for biomass and waste, the remainder (30%) is split between municipal solid waste (14.1%), biofuels (11.2%) and biogas (7.2 %). Figures are for the year 2008. See, Eurostat, *Forestry in the EU and the World, A Statistical Portrait. 2011 Edition* (Publications Office of the European Union 2011) 94.

²⁹ Wood biomass is one of the only renewable materials that can be used to produce power, heat, and liquid fuels at the same time. The advanced liquid biofuels, also referred to as second or third generation biofuels are mainly in the research and development or pilot phase.

³⁰ Eurostat, *Agriculture, Forestry and Fishery Statistics, 2013 Edition*, 199.

³¹ Art 2(h) and 2(i) RED.

³² Eurostat, *Forestry in the EU and the World*, 94.

³³ European Commission, *Biomass*, 34.

³⁴ *Ibid*.

etc.³⁵ Non-food feedstock biofuels of the second and the third generations, including those of the cellulosic origin, have not yet been proven on a commercial scale, and are only envisaged for the future.³⁶ Thus, as a fuel, wood is mostly used directly (ie wood is not converted into biofuels or bioliquids on a commercial scale).

In contrast with fossil fuels, the leading energy resource at present,³⁷ biomass resources are renewable. Being of biological origin such resources can be replenished with the passage of time. However, they are not infinite. If the rate at which renewable resources are consumed exceeds their renewal rate, sustainability may no longer be ensured.

The Renewable Energy Directive aims to secure efficient and sustainable use of natural resources for energy purposes, but mostly of those, used for biofuels and bioliquids production. Recital 65 of the Directive clearly states that ‘[...] biofuel production should be sustainable’,³⁸ Article 17 establishes ‘sustainability criteria’, a regulatory tool to ensure the sustainable production of biofuels. Traditionally derived from agricultural resources, biofuels comprise a very modest part of the total biomass used for energy purposes in the EU. The renewal rates of raw materials used for the production of biofuels are much shorter than those of the leading renewable energy resource – wood biomass. The sustainability risks associated with the production of biofuels and those of the biomass originating from forestry are different. Ensuring sustainability of wood resources used for energy purposes remains a legal challenge.

2.2. Biomass and forests’ sustainability

Wood biomass, the leading renewable energy resource, originates from forestry. Besides energy production, forests are expected to provide a long list of products, including water, wood and non-wood products. People also rely on forest areas for the provision of various services, eg recreation, weather regulation, habitat for wildlife and biodiversity, etc. Forests also sequester carbon and thus help to mitigate climate change. In the light of all these ecosystem

³⁵ http://ec.europa.eu/energy/renewables/bioenergy/bioenergy_en.htm.

³⁶ The use of food-based biofuels is proposed to be limited to 5% in the RED for transport target. See, European Commission, ‘Proposal for a Directive of the European Parliament and of the Council, amending Directive 98/70/EC relating to the quality of petrol and diesel fuels and amending Directive 2009/28/EC on the promotion of the use of energy from renewable sources’ COM(2012) 595 final; T Anderson, ‘Turning Fossil Residues to Biofuel’ (5 July 2013) available at <http://www.tgdaily.com/general-sciences-features/72357-turning-forest-residues-to-biofuel>.

³⁷ EU-27 primary energy production in 2010 accounted for 19.6 % from solid fuels, largely coal, 18.8 % from natural gas, and 11.7 % from crude oil. These figures are in general comparable with the overall world statistics: in 2011 fossil fuels constituted 81.6% of the total primary energy supply in the world (oil fuel accounted for 31.5%, coal and peat accounted for 28.8% and natural gas accounted for 21.3%). Globally fossil fuels have been the most important primary energy sources since 1973. For more information see Eurostat, ‘Energy Production and Imports’ available at

http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Energy_production_and_imports. *Key World Energy Statistics* (International Energy Agency 2013) 6.

³⁸ Recital 65 to RED.

services³⁹, wood biomass production for energy purposes puts additional pressure on forests and brings up some quite alarming sustainability concerns. Such concerns relate especially to the future. Then the need for biomass will have multiplied, and the stress caused by the production and harvesting biomass will have more than just a marginal impact on the environment.

One of the major concerns with regard to large-scale biomass for energy purposes production and forests is direct and indirect land-use change.⁴⁰ Direct land-use change (DLUC) refers to a situation in which forest is directly converted to land for biomass production. Indirect land-use change (ILUC) takes place when agricultural land previously used for food or animal feed production is converted into land for renewable fuel production. Thus, replacement of 10 per cent of transport fuel with biofuels by 2020 would require the equivalent of 38 per cent of current cropland in the EU.⁴¹ Land use change can lead to reduction of land carbon stock in the soil, if, for instance, after energy cropping too few forest residues are left on the land.

Meeting the 2020 binding renewable energy target means that the demand for wood as the major biomass renewable energy resource will continue to increase. Some estimates predict that, if the 2020 target is achieved, the amount of wood used for energy purposes in the EU would be equivalent to today's total wood harvest.⁴² It will lead to intensification and expansion of logging practices,⁴³ which may have negative environmental impacts: loss of productivity and soil fertility; the risk to forest health and biodiversity; the loss of water quality and other ecosystem values.⁴⁴

The EU cannot produce and supply wood biomass for its 28 Member States up to the amounts that the Renewable Energy Directive is demanding. Wood biomass import is likely to play a

³⁹ Ecosystem services are the benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth. For the definition see, Millennium Ecosystem Assessment, 'Ecosystems and Human Well-being: A Framework for Assessment' available at <http://www.maweb.org/documents/document.48.aspx.pdf>, 3

⁴⁰ For more on DLUC and ILUC see European Commission, 'Report from the Commission on indirect land-use change related to biofuels and bioliquids' COM (2010) 811 final, 3–5; D Laborde, 'Assessing the Land Use Change Consequences of EU Biofuel Policies. Final Report' (International Food Policy Institute and European Commission 2011).

⁴¹ *Biofuels for Transport. An International Perspective* (International Energy Agency 2004) 130.

⁴² European Commission, 'Communication from the Commission to the European Parliament, the Council, the European and Social Committee and the Committee of the Regions. A new EU Forest Strategy: for forests and the forest-based sector' COM(2013) 659 final, 2.

⁴³ It is difficult to say how much biomass at present is directly harvested in forests and is used for energy purposes. According to estimations of an ongoing study by the United Nations Economic Commission for Europe (UNECE), around 24% of wood biomass for energy comes from direct removals from forests in Europe. Although the current sustainability risks are considered to be low, the expected increase of demand for domestic and non-EU biomass warrants vigilance. See, European Commission, 'EU Biomass Report' COM(2010) 11 final, 4–5.

⁴⁴ The environmental impacts may vary in nature and extent according to scale, intensity and type of wood biomass production and harvesting system used. The impacts can be either positive or negative. Potential benefits include reduced fire risk and lower nutrient leakage on eutrophicated sites. See *Criteria and Indicators for Sustainable Woodfuels* (Food and Agriculture Organization of the United Nations 2010) 15.

significant role in meeting the 2020 target.⁴⁵ It may lead to sustainability risks and increased pressure on forests outside the EU. Thus, according to International Energy Agency (IEA), the total annual import of wood pellets into the EU under the business as usual scenario is expected to increase drastically from 2 million tons in 2010 to over 16 million tons in 2020.⁴⁶ The Russian Federation (RF) is expected to remain among the most important countries outside the EU for wood biomass imports until 2020.⁴⁷ The current rate of illegal logging in Russia is extremely high.⁴⁸ Effects of unsustainable logging practices include forest degradation, biodiversity loss and climate change. International trade of illegally harvested timber may only exacerbate the problem.

Increasing demand for biomass and wood biomass, and in particular, its growing import for energy purposes from third-party countries create a certain challenge for EU regulatory activities, which relate specifically to the sustainability of the leading renewable biomass resource in the EU and in the exporting countries. It seems obvious that, legislation is required to regulate where and how wood biomass for energy purposes is produced.

3. RED SUSTAINABILITY SCHEME

3.1. RED sustainability criteria⁴⁹

Although the Renewable Energy Directive introduces ‘the most comprehensive and advanced binding sustainability scheme of its kind anywhere in the world’, solid biomass and, in particular, wood biomass, is not subject to the sustainability requirements.

The sustainability criteria, laid down in Article 17, apply only to biofuels and bioliquids, irrespective of whether the raw materials were cultivated inside or outside the EU.⁵⁰ Compliance with these criteria is not a precondition for placing biofuels on the EU market; biofuels may be produced and imported even if the binding criteria are not met. However, in order to be calculated towards the 10 per cent binding target and be eligible for financial support or state aid, compliance with the sustainability criteria is required.⁵¹

⁴⁵ European Commission, ‘Results of the Public Consultation on Additional Sustainability Measures at EU Level for Solid and Gaseous Biomass used in Electricity, Heating and Cooling’ (July 2011) 4.

⁴⁶ M Cocchi et al, *Global Wood Pellet Industry – Market and Trade Study* (International Energy Agency 2011) 6–13.

⁴⁷ European Commission, ‘Results of the Public Consultation on Additional Sustainability Measures’ (July 2011) 4.

⁴⁸ Russian Federal Forestry Agency, ‘Annual Report on Forests State and Utilization in 2011’ (2013) 65. Author’s translation from Russian.

⁴⁹ More on sustainability requirements for biofuels see, S Romppanen, ‘Regulating Better Biofuels for the European Union’ (2013) 21 *European Energy and Environmental Law Review* 123; FX Johnson, ‘Regional–Global Linkages in the Energy–Climate Development Policy Nexus: The Case of Biofuels in the EU Renewable Energy Directive’ (2011) *Renewable Energy Law and Policy* 91.

⁵⁰ Art 17 RED.

⁵¹ *Ibid* Art 17.1, Annex I.

The Renewable Energy Directive's sustainability criteria are fully harmonized. They were adopted under Article 114 (ex. Article 95) of the Treaty on the Functioning of the European Union (TFEU). Thus, MS are not permitted to set additional criteria for the same purposes as those of the Renewable Energy Directive or exclude biofuels on sustainability grounds other than those set out in the RED.⁵²

The RED sustainability scheme may be systemized as follows. According to the 'emissions-related sustainability criteria', the use of the biofuel must result in a greenhouse gas emission saving of at least 35 per cent. From 1 January 2017, that figure rises to a saving of at least 50 per cent. From 1 January 2018, for biofuels the production of which started on or after 1 January 2017, the figure rises to a saving of at least 60 per cent.⁵³

According to the 'land-related sustainability criteria', for all biofuels other than those produced from non-biological waste and residues,⁵⁴ the biofuel or bioliquid must not have been made from raw material obtained from land with high biodiversity value (as determined in or after January 2008), for instance, primary forest, areas designated for protection purposes and highly biodiverse grassland.⁵⁵ Sustainably produced biofuels must not be made from raw materials obtained from land with high carbon stock, for instance, land which was considered wetlands or areas which were continuously forested in January 2008 and no longer have that status.⁵⁶ Sustainably produced biofuels must not be produced from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation did not involve draining previously undrained soil.⁵⁷

In order to indicate how Member States plan to implement sustainability criteria on the national level, Article 4 of the Renewable Energy Directive requires MS to submit National Renewable Energy Action Plans (NREAPs).⁵⁸ Such plans provide detailed roadmaps of how the Member States mean to reach their legally binding 2020 target for the share of renewable energy in their final energy consumption.

In order to comply with the high EU standards, biofuel producers all around the world can use any voluntary scheme that is recognized by the European Commission (E.C.) and that has the requisite verification system in place to cover some or all of the sustainability criteria.⁵⁹ As of March, 2013 there are 13 such 'voluntary schemes' for certifying sustainable biofuels production.⁶⁰ Moreover, the Commission is obliged to report to the European Parliament and the

⁵² Ibid Preamble and recital 94.

⁵³ Ibid Art 17.2.

⁵⁴ Ibid Art 17.1. para 2.

⁵⁵ Ibid Art 17.3.

⁵⁶ Ibid Art 17.4.

⁵⁷ Ibid Art 17.5.

⁵⁸ Ibid Art 4.

⁵⁹ Ibid Art 18; European Commission, 'Communication from the Commission on the voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme' [2010] OJ C160/1.

⁶⁰ European Commission, 'Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Renewable energy progress report' COM (2013) 175 final, 11.

Council every two years on the measures taken to fulfill the sustainability criteria as well as on the impact of the European Union's biofuels policy on a range of concerns both in MS and in third-party countries.⁶¹

Although the use of solid biomass is much more common in the EU than the use of biofuels, currently the RED sustainability criteria do not apply to solid biomass, such as wood. That has inspired many arguments and calls from environmental organizations and biomass importing countries to establish a common sustainability scheme for solid biomass, and, in particular, biomass, derived from forest products.⁶²

3.2. *The RED sustainability scheme and wood biomass*

At present, with regard to sustainability scheme for energy uses of biomass, other than biofuels and bioliquids, the Renewable Energy Directive simply establishes an obligation for the European Commission to report on the requirements for such a scheme.⁶³ The Directive calls to take into account the 'need to manage biomass resources in a sustainable manner',⁶⁴ and does not define exactly what 'sustainable management' is; nor does the Directive explain the meaning of the term 'sustainable' in its context.

In 2010 the Report on Sustainability Requirements for the Use of Solid and Gaseous Biomass Sources in Electricity, Heating and Cooling (EU Biomass Report)⁶⁵ was adopted. In the Report, the Commission acknowledges high sustainability risks associated with the increased demand for domestic and especially non-EU wood biomass production,⁶⁶ but argues that it is not necessary to extend the sustainability scheme for biofuels and bioliquids to other energy uses of biomass. For wood biomass produced within the EU, the current legal framework on forest management, including the applicable forest laws of MS and forest management planning at national level as well as policy guidance through the EU Forest Strategy and international processes, such as the Ministerial Conferences for the Protection of Forests in Europe (MCPFE), provides assurances for sustainable production of biomass. The same is declared true for some third-party countries.⁶⁷

At the same time, in order to prevent disruption of the internal market and avoid unwarranted discrimination in the use of raw materials, the Commission recommends that MS, which have developed (or plan to develop) national sustainability rules for biomass, adopted criteria in

⁶¹ Art 17.7. RED.

⁶² See, for instance, European Commission, 'EU Biomass Report' COM(2010) 11 final, 3; Bird Life, Greenpeace, European Environmental Bureau, Client Earth and FERN, 'NGO Briefing, Sustainability Issues for Solid Biomass in Electricity, Heating and Cooling' (20 March 2012); European Biomass Association and Eurelectric, 'Press Release: AEBIOM and EURELECTRIC call for EU wide binding sustainability criteria for biomass now' (13 March 2013).

⁶³ Art 17.9. RED.

⁶⁴ Ibid Recital 75.

⁶⁵ European Commission, 'EU Biomass Report' COM (2010) 11 final.

⁶⁶ Ibid 9–10.

⁶⁷ Ibid 2–3.

almost all respects similar to those of the RED, applying to biofuels and bioliquids.⁶⁸ Among the few recommended amendments, the Commission proposes not to impose sustainability criteria on wastes.⁶⁹ However, most of the wood biomass comes from forest residues (small trees, branches, tops and un-merchantable wood left on the ground after timber-harvesting operations, etc).⁷⁰ Their use for energy purposes without sustainability requirements may lead to negative impacts on soil, water retention, and simplification and homogenization of managed forests.⁷¹

The Commission acknowledges ‘large knowledge gaps’⁷² with regard to the use of biomass in the EU, its amount and the effects of biomass use on the areas of its origin. In order to improve the quality of available data, MS are recommended to report to the European Commission. The indicator for meeting the EU binding 2020 Renewable Energy objectives is the increasing use of biomass without leading to deforestation, forest degradation or higher GHG emissions.⁷³ The Report concludes that ‘the emergence of wider sustainability regimes affecting forests, or [...] forest products will be monitored, to assess whether sustainability requirements for only the energy uses of forest [...] biomass help to deliver on sustainable development for the forest sector’.⁷⁴

4. WOOD BIOMASS AND CURRENT LEGAL FRAMEWORK ON FOREST MANAGEMENT

4.1. *EU Forest Law and Policy*

At present there is no common policy on forests in the EU.⁷⁵ There are policies, such as rural development, climate change, energy, etc, which have significant effect on forests, but they have been designed to address particular non-forest issues. The increasing demands put on forests could be taken in to account by a new Forest Strategy, which would respond to all the significant societal and political challenges affecting forests. In September 2013 such a Strategy was adopted by the European Commission.⁷⁶ Although the new Forest Strategy highlights the need for a holistic approach towards forests: they are important for rural development, en-

⁶⁸ Ibid 8–9.

⁶⁹ Ibid 9.

⁷⁰ Ibid 3.

⁷¹ EL Linholm, S Berg and PA Hansson, ‘Energy Efficiency and the Environmental Impact of Harvesting Stumps and Logging Residues’ (2010) 129 *European Journal of Forest Research* 1223–35; Fritsche et al, ‘Outcome Paper: Sustainability Criteria and Indicators’, 24–46.

⁷² European Commission, ‘EU Biomass Report’ COM(2010) 11 final, 9.

⁷³ European Commission, ‘Commission Staff Working Document on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling’ SEC(2010) 65 final, 53.

⁷⁴ European Commission, ‘EU Biomass Report’ COM(2010) 11 final, 10.

⁷⁵ European Commission, ‘Communication from the Commission. A new EU Forest Strategy: for forests and the forest-based sector’ COM(2013) 659 final,.

⁷⁶ The former EU Forestry Strategy dates back to 1998. For more info see *ibid*.

vironment, forest-based industries, bioenergy and in the fight against climate change, the document remains strategic in character and represents only a high level ambitious plan.⁷⁷

The development of the binding EU forest law has been largely restricted by the prevailing principle of sovereignty over natural resources.⁷⁸ In relation to forests, it means that forests fall under domestic jurisdiction and are regulated in each Member State by a complex set of legal instruments. The choice of regulatory instruments depends largely on the traditions, culture, and history of each country. That explains the variety of forests ownership forms, the variety of national objectives and the variety of the main principles of forest management.⁷⁹ The overall national regulatory approach to forest management may also diverge and be a ‘protective’ one, when forests are primarily viewed as a feature of environment to be preserved, or a ‘productive’ approach, when, in contrast, forests are viewed as a source of economically valuable timber resource and/or a source of land to aid the expansion of agriculture.⁸⁰ However, there is an increasing tendency to manage EU forests in order to appreciate their ecologic, economic and social values.

4.2. Sustainable Forest Management

Sustainable Forest Management (SFM) – is an ‘evolving and dynamic’⁸¹ concept that attempts to recognize and incorporate all values associated with all types of forests for the benefit of present and future generations. At present, there is no one authoritative definition of SFM, nor one EU-wide form for implementing SFM. A workable definition of forests’ ‘sustainable management’ was created in 1993 in Helsinki at the Second Ministerial Conference on the Protection of Forests in Europe (MCPFE):⁸² ‘the stewardship and use of forests and

⁷⁷ YM Gordeeva, ‘Recent Developments in Environmental Policy and Legislation’ (2014) 11 *Journal for European Environmental and Planning Law* 303.

⁷⁸ Principle 2 of the Rio Declaration on Environment and Development, which was adopted at the 1992 Earth Summit in Rio de Janeiro, stated that ‘States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or areas beyond the limits of national jurisdiction’. This principle was confirmed in Principle 2(a) of the 1992 Non-Legally Binding Authoritative Statement of Principles for a Global Consensus on the Management, Conservation and Sustainable Development of all Types of Forests (Forest Principles), also adopted in Rio, and also later in the 2007 Non-legally Binding Instrument on All Types of Forests (NLBI). The emphasis on sovereignty over the natural resources in international environmental cooperation has led to the absence of a universal legally binding framework document on forests. M Shaw, *International Law* (Cambridge University Press 2008) 850; A Kiss and D Shelton, *Guide to International Environmental Law* (Martinus Nijhoff 2007) 11–12.

⁷⁹ Y Gordeeva and W Hensen, ‘International Forest Law and National Forest Law (Case Study of Flemish Region, Kingdom of Belgium)’ (2013) *Contemporary Issues in Law* 72. Author’s translation from Russian.

⁸⁰ *State of the World’s Forests* (FAO 2012) 29.

⁸¹ Non-legally Binding Instrument on All Types of Forests, adopted 17 December 2007, Art III, 4.

⁸² MCPFE or Forest Europe is the pan-European political process for the sustainable management of the continent’s forests. MCPFE develops common strategies for its 46 member countries and the European Union on how to protect and sustainably manage forests. Since 1990, the collaboration of the ministers responsible for forests in Europe has had a great economic, environmental and social impact on the national and international level. FOREST EUROPE has led to achievements such as the guidelines, criteria and indicators for sustainable forest management. See <http://www.foresteuropa.org/print/3>.

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'.⁸³ To further define the elements of SFM, criteria and indicators (C&I) were established.⁸⁴ The C&I do not have any normative power; they are designed to be used as a definitional tool, outlining the requirements for SFM. The C&I provide a framework for assessing a progress towards sustainable forest management at the individual state level.

Another way to implement the SFM concept is forest certification. It is a voluntary and market-driven mechanism, which through labelling forest products, enables consumers, retailers and manufacturers to acquire products, derived from environmentally and socially responsible forests operations. Thus, forest certification leads to the better management and use of forest resources. The two most-prevalent certification systems in the EU are the Forest Stewardship Council (FSC) and the Program for the Endorsement of Forest Certification (PEFC).⁸⁵

Other certification initiatives, which are significant for ensuring the sustainability of wood biomass, include the normative work of the European Committee for Standardisation (CEN). Its technical Committee 383 for 'Sustainably Produced Biomass for Energy Applications' is elaborating a European Standard for sustainable biomass for energy applications. Although the standard is strictly bound to the EU Renewable Energy Directive, it doesn't cover indirect effects and requirements specifically related to solid and wood biomass.

All the mentioned certification systems and suggested SFM criteria and indicators were designed for particular purposes and do not have specific standards for wood biomass harvest (Table 1⁸⁶), which limits their ability to address the additional wood biomass harvest risks and show a need for further advancement of the current C&I. In 2009 the MCPFE Working Group on 'sustainability criteria' for forest biomass production examined the tools of the MCPFE with regard to SFM related to sustainable production of wood biomass and proposed further alterations.⁸⁷ During the Policy Debate on Wood Energy, held in Geneva in May 2012, a wide group of stakeholders agreed that the production and consumption of wood biomass for energy purposes must be accompanied by the development of certification schemes and criteria

⁸³ Second Ministerial Conference on the Protection of Forests in Europe, Resolution H1, General Guidelines for the Sustainable Management of Forests in Europe, paragraph D, available at http://www.foresteurope.org/docs/MC/MC_helsinki_resolutionH1.pdf.

⁸⁴ A criterion is a category of conditions or processes by which sustainable forest management may be assessed; an indicator is a quantitative or qualitative variable that can be measured or described.

⁸⁵ However, globally there are also other forest certification schemes with the objective to achieve SFM. Examples may include Canadian Standards Association (CSA), Pan African Forest Certification Scheme (PAFC), Australian Forestry Certification Standard (AFCS, recognized by PEFC), etc.

⁸⁶ International Institute for Sustainability Analysis and Strategy (IINAS), NL Agency Ministry of Economic Affairs, Agriculture and Innovation, European Commission Joint Research Centre, Institute for Energy and Transport, Outcome Paper: Sustainability Criteria and Indicators for Solid Bioenergy from Forests', based on the Joint Workshops on Extending the RED Sustainability Requirements to Solid Bioenergy (2012) 14.

⁸⁷ See 'Report of the MCPFE Open-Ended Ad Hoc Working Group on Criteria for forest biomass production, including bioenergy' (2009) available at http://www.foresteurope.org/docs/work_programmes/MCPFEWG_sustainabilitycriteriaFinalreport.pdf.

for meeting sustainability requirements while achieving renewable energy and biological diversity targets.⁸⁸

Table 1: Environmental Criteria Considered in various Certification Schemes

Environmental Criteria	Legislative Requirements	Forest Certification Schemes	
	Renewable Energy Directive (Biofuels)	FSC	PEFC
Greenhouse gas balance	=	-	-
Carbon storage in soil	+	=	-
Soil protection	=	+	+
Water management	=	+	+
Ecosystem protection	-	+	+
Waste management	-	+	+
Biodiversity protection	+	+	+
Use of chemicals, pest control, fertilizer	-	+	+
Land use change	-	+	+
Use of GMOs	-	+	+
Emission other than GHGs (air quality)	-	-	-
Conservation of primary forest	+	+	=
Minimization of deforestation	-	+	+
Sustaining yield of land	-	+	+
Restoration of forests and ecosystems	-	+	+

(+) extensively covered, (=) partially covered, (-) not covered; FSC: Forest Stewardship Council; PEFC: Program for Endorsement of Forest Certification.

Source: International Institute for Sustainability Analysis and Strategy, NL Agency Ministry of Economic Affairs, Agriculture and Innovation, European Commission Joint Research Centre, Institute for Energy and Transport, 'Outcome Paper: Sustainability Criteria and Indicators for Solid Bioenergy from Forests', based on the Joint Workshops on Extending the RED Sustainability Requirements to Solid Bioenergy (2014).

⁸⁸ For further information see United Nations Economic Commission for Europe, 'Policy Debate on Woody Energy' (8 May 2012) available at <http://www.unecce.org/energy-debate-2012.html>.

4.3. *Forest Management Plans*

The European Commission enumerates Forest Management Plans (FMP) as a part of ‘the current legal framework on forest management that provide assurance for sustainable biomass production’.⁸⁹ Forest management planning is a part of the voluntary processes, such as, the MCFPE process and forest certification standards. The practice of forest management planning differs among MS (ie in Germany the Federal Forest Act includes provisions on the overall forestry planning;⁹⁰ in Malta, where forest can hardly be found, ‘afforestation projects’ take place;⁹¹ in Flanders, Belgium, forest management is planned for the period of 20 years;⁹² whereas in the Republic of Poland the planning period lasts 10 years;⁹³ etc)

In general, FMP – is a tool for guiding and achieving SFM, defined as ‘All the information, in the form of the text, maps, tables and graphs, collected during forest inventories and condensed into a written scheme of management aiming at continuity of policy and action and controlling the treatment of a forest’.⁹⁴ FMP comprises long-term goals as well as annual plan of operations (operations in the short term) but shows great variability among and within countries.⁹⁵ Forest Management Plans, which are written for a period of 10 to 15 years, typically include:

1. An articulation of the objectives of the woodland owner;
2. Forest inventory data;
3. Maps denoting relevant property-specific information (eg, location, boundaries, individual stands, soil types, tree retention areas, key conservation features, and future harvest areas),
4. Detailed descriptions and chronology of silvicultural treatments for each forest stand.⁹⁶

No doubt, a FMP can help to assure that biomass harvesting is ecologically sound and aligned with the long-term productivity and ecosystem services of the stand, but its existence *per se* does not assure that it would be the guide when activities are performed on the stand.

⁸⁹ European Commission, ‘EU Biomass Report’ COM (2010) 11 final.

⁹⁰ HW Roering, ‘Germany, Forestry at Federal Level’ in *Forest and Forestry in European Union Countries* (State Forest Research Institute 2006) 120.

⁹¹ JN Ebejer, ‘Malta’ in *Forest and Forestry in European Union Countries* (State Forest Research Institute 2006) 333.

⁹² Gordeeva and Hensen, ‘International Forest Law and National Forest Law’, author’s translation from Russian.

⁹³ YM Gordeeva and K Chlebowski, ‘Basics of the Forest Policy and Law in the Republic of Poland’, *Theoretical and Applied Ecology* (2013) 101. Author’s translation from Russian.

⁹⁴ Food and Agriculture Organization, ‘Language Resources Project’ (2005) available at <http://termportal.fao.org/faoterm/searc/pages/termUrl.do?id=63580>.

⁹⁵ *State of Europe’s Forest 2011. Status and Trends in Sustainable Forest Management in Europe* (Foresturope, UNECE and FAO 2011).

⁹⁶ B Kittler et al, *Pathways to Sustainability. An Evaluation of Forestry Programs to Meet European Biomass Supply Chain Requirements* (Environmental Defense Fund and Pinchot Institute for Conservation 2012).

4.4. Raw material legitimacy: FLEGT

Legality of wood biomass production is ensured through the Forest Law Enforcement, Governance and Trade (FLEGT). The FLEGT Action Plan⁹⁷ specifies a number of measures to exclude illegal timber and timber products from markets, to improve the supply of legal timber and to increase the demand for responsible wood products. The legal framework for the FLEGT Action Plan consists of two Regulations.

The 2005 Regulation⁹⁸ establishes a set of rules for the import of certain timber products, which is implemented through Voluntary Partnership Agreements (VPA) with timber producing countries. Such VPAs are bilateral legally binding agreements between the EU and the timber exporting countries, which aim to guarantee that the wood exported to the EU is from legal sources, and to support partner countries in improving their own regulation and governance of the sector.⁹⁹ There are currently six countries developing the systems agreed upon a VPA (Cameroon, Central African Republic, Ghana, Indonesia, Liberia, Republic of Congo – Brazzaville), six countries that are negotiating with the EU and around 15 countries have expressed their interest in VPAs.¹⁰⁰

The 2010 Timber Regulation¹⁰¹ prohibits placing illegally harvested timber on the EU market and lays down the obligations for operators who place timber and timber products on the EU market for the first time: to exercise due diligence and to evaluate the due diligence system.¹⁰² Moreover, the Regulation *inter alia* applies specifically to fuel wood, wood in chips and particles, etc.¹⁰³ According to the Regulation, ‘legally harvested means harvested in accordance with the applicable legislation in the country of harvest’.¹⁰⁴ In that context, sustainability of wood biomass may be guaranteed through legality or compliance with the MS’ national sustainability rules for biomass.

5. CONCLUDING REMARKS

Climate change law in the European Union is an evolving and dynamic field of law. The broad field encompasses also other fields such as, for instance, energy and natural resources. Combating climate change under the current regulatory approach may result in unintended

⁹⁷ European Commission, ‘Communication from the Commission to the Council and the European Parliament. Forest Law Enforcement, Governance and Trade (FLEGT). Proposal for an EU Action Plan’ COM(2003) 251 final.

⁹⁸ Council Regulation No 2173/2005 of 20 December 2005 on the Establishment of a FLEGT licensing scheme for imports of timber into the European Community [2005] OJ L347/1.

⁹⁹ European Forest Institute, FLEGT Voluntary Partnership Agreement, Ensuring Legal Timber, Trade and Strengthening Forest Governanc (2014) <http://www.euflegt.efi.int/home/>.

¹⁰⁰ Ibid.

¹⁰¹ Regulation (EU) No 995/2010 of the European Parliament and of the Council of 20 October 2010 laying down the obligations of operators who place timber and timber products on the market [2010] OJ L295/23.

¹⁰² Ibid Art 4.

¹⁰³ Ibid Annex.

¹⁰⁴ Ibid Art 2.

negative environmental impacts, which create new legal challenges. A vivid example of this is wood biomass sustainability.

The Renewable Energy Directive stimulates a tremendous growth in the use of wood (biomass) as a source of renewable energy. Wood biomass production for energy purposes puts additional pressure on forests and adds to the already alarmingly high global deforestation tendency extra-sustainability concerns (DLUC and ILUC, reduction of land carbon stock in the soil, the loss of water quality, etc). Such concerns relate especially to the future, when the wood biomass harvest will have more than just a marginal impact on the environment. It seems obvious legislation is required to regulate where and how wood biomass for energy purposes is produced. Increasing demand for wood biomass and its growing import for energy purposes from third-party countries create a challenge for EU regulatory activities relating to the sustainability of the leading renewable energy resource in the EU and in the exporting countries.

Although the RED aims to secure efficient and sustainable use of natural resources for energy purposes and has been declared to introduce ‘the most comprehensive and advanced binding sustainability scheme of its kind anywhere in the world’,¹⁰⁵ wood biomass is not a subject to its sustainability requirements. Whether MS have developed or plan to develop national sustainability rules for wood biomass, and the effectiveness of such criteria requires further investigation. However, as this article has tried to prove, achieving comprehensive sustainability, not only for biofuels and bioliquids, at the EU level, requires greater effort.

The European Commission acknowledges the sustainability risks associated with the increased demand for domestic and especially non-EU wood biomass production, but argues that it is not necessary to extend the sustainability scheme for biofuels and bioliquids to other energy uses of biomass. For wood biomass produced within the EU, the current legal framework on forest management, including the applicable forest laws of the MS and forest management planning at a national level as well as policy guidance through the EU Forest Strategy and international processes such as the Ministerial Conferences for the Protection of Forest in Europe is declared to provide assurances for sustainable production of biomass. The same is viewed true for some third-party countries.

At present there is no common policy on forests in the EU. The fragmented binding laws, which have significant effects on forests, have been designed to address non-forest issues (energy, rural development, climate change, etc). Mostly because of the prevailing principle of state sovereignty over natural resources and high economic value of timber resources MS are unwilling to accept any limitations upon domestic forest use and management policies. The existing EU legal framework, which helps to ensure the most efficient way of using wood bi-

¹⁰⁵ European Commission, ‘Commission Staff Working Document. Report on the operation of the mass balance verification method for the biofuels and bioliquids sustainability scheme in accordance with Article 18(2) of Directive 2009/28/EC. Accompanying document to the Communication from the Commission to the European Parliament and the Council. Renewable Energy: Progressing towards the 2020 target’ SEC(2011) 129 final, 2.

SUSTAINABLE ENERGY UNITED IN DIVERSITY – CHALLENGES AND APPROACHES IN ENERGY TRANSITION IN THE EUROPEAN UNION

omass and high environmental values (EU Forest Strategy, MCPFE process, forest management planning, etc), is for the most part soft and/or has a limited ability to address the additional wood biomass harvest for energy purposes risks.

Thus, there is a need for further advancement of the current legal framework to ensure wood biomass sustainability.