

Íñigo del Guayo Castiella

*Food, energy and poverty.  
Fighting to achieve the United Nations  
Sustainable Development Goals.  
The case of biofuels in the European Union*

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*1. Introduction. The links between energy and food*

There is a strong link between energy and food. The use of food and water can only take place with energy. Global sustainability is currently challenged by uncertainties in the fields of food and energy. Energy and food are intertwined areas for research, face similar challenges and policy-makers should take holistic decisions, so that they become truly available for those

inhabitants of the planet who do not have access to them. Land for agricultural purposes is often used to grow vegetal which can easily be transformed into biofuels (such as corn). This causes problems in growing the food needed, and rises the price of available food. Organic waste from agricultural activities is considered to be biomass and can be used to produce bio-methane or biogas. Energy crops are crops grown solely for energy. These crops are processed into solid (pellets), liquid (biofuels or biodiesel) or gaseous fuels, which are later burned to generate power or heat. They are usually genetically modified. As to gaseous fuels, crops are put into a silage and converted into biogas. In developed countries, agricultural lands can be destined to the setting up of renewable energies installations. These links between food and energy have their replicate in the realm of law. This means that there is the need to apply a combination of energy law and food law. Take, for example, the EU rules on State Aids. They could be violated by means of preferential tariffs to farmers in order to produce biofuels<sup>1</sup>. This contribution focuses in biofuels, an area where energy and food are strongly intertwined<sup>2</sup>.

## *2. Energy and food and the fight against poverty in the context of the United Nations Sustainable Development Goals*

The United Nations' 2030 Agenda for Sustainable Development was adopted in 2015 by 193 of its members, offering seventeen goals to "transform our world".<sup>3</sup> These UN Sustainable Development Goals (SDG) include eradicating poverty and hunger, and affordable, clean energy. Energy is a crucial part of people's daily life, therefore access to it will be a determining factor in the people's quality of life. Sustainable Development Goals number 1 ("No poverty": SDG1), 2 ("No hunger": SDG2) and number 7 ("Affordable and Clean Energy": SDG7) are the SDGs goals

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<sup>1</sup> See further, VEDDER, RONNE, ROGGENKAMP, DEL GUAYO, *EU Energy Law* (Chapter IV), in ROGGENKAMP, RONNE, REDGWELL, DEL GUAYO (eds), *Energy Law in Europe. National, EU and International Regulation*, Oxford, 2016, III ed., pp. 187-366.

<sup>2</sup> See further, DEL GUAYO, *Biofuels: EU Law and Policy*, in ZILLMAN, REDGWELL, OMOROGBE, BARRERA-HERNÁNDEZ, *Beyond the Carbon Economy. Energy Law in Transition*, Oxford, 2008, pp. 265-286.

<sup>3</sup> United Nations, 'Transforming our world: The 2030 Agenda for Sustainable Development', Resolution Adopted by the General Assembly on 25 September 2015 A/Res/70/1, [http://www.un.org/ga/search/view\\_doc.asp?symbol=A/RES/70/1&Lang=E](http://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E), accessed 29 November 2017.

directly related to food and energy. The goals contained in SDG7 specifically refers to the need of ensuring access to affordable, reliable, sustainable and modern energy. The international organization ‘Sustainable Energy for All’ (SEforALL) works to help a faster achievement of SDG7. There are other regional initiatives of the same nature, such as the so-called 2017 winter package of the EU which refers to ‘clean energy for all’<sup>4</sup>.

Energy and food are essential tools in the fight against global poverty. Without food, the first and main Goal within the Sustainable Developments Goals (No Hunger) cannot be achieved. Those Goals 1, 2 and 7, read as follows:

*«Goal 1: No Poverty. Economic Growth must be inclusive to provide sustainable jobs and promote equality*

*Poverty is more than the lack of income and resources to ensure a sustainable livelihood. Its manifestations include hunger and malnutrition, limited access to education and other basic services, social discrimination and exclusion as well as the lack of participation in decision-making.*

*Goal 2: No Hunger. The food and agriculture sector offers key solutions for development, and is central for hunger and poverty eradication.*

*A profound change of the global food and agriculture system is needed if we are to nourish the 815 million people who are hungry today and the additional 2 billion people expected to be undernourished by 2050. Investments in agriculture are crucial to increasing the capacity for agricultural productivity and sustainable food production systems are necessary to help alleviate the perils of hunger.*

*Goal 7: Energy is central to nearly every major challenge and opportunity. Affordable and Clean Energy. Ensuring access to affordable, reliable, sustainable and modern energy.*

*At the current time, there are approximately 3 billion people who lack access to clean-cooking solutions and are exposed to dangerous levels of air pollution. Additionally, slightly less than 1 billion people are functioning without electricity and 50% of them are found in Sub-Saharan Africa alone. Fortunately, progress has been made in the past decade regarding the use of renewable electricity from water, solar and wind power and the ratio of energy used per unit of GDP is also declining.*

*However, the challenge is far from being solved and there needs to be more access to clean fuel and technology and more progress needs to be made regarding integrating renewable energy into end-use applications in buildings, transport*

<sup>4</sup> <https://ec.europa.eu/energy/en/topics/energy-strategy-and-energy-union/clean-energy-all-europeans>.

*and industry. Public and private investments in energy also need to be increased and there needs to be more focus on regulatory frameworks and innovative business models to transform the world's energy systems».*

Access to food is vital to human beings. Access to energy services is directly related to a better quality of life for humans: countries with lower poverty rates have a greater energy consumption<sup>5</sup>.

### *3. A criticism against biofuels from the concepts of energy and environmental justice. The work of Carmen G. González<sup>6</sup>*

As González shows, it is widely believed that replacing fossils with biofuels reports, among other advantages, the following: i) climate change mitigation; ii) energy security promotion; and iii) economic development advancement in the countries that produce the crops used as biofuel feedstocks.<sup>7</sup>

However, this author argues that biofuels policies in the USA and in the EU “have produced environmental injustice in Asia, Africa, and Latin America, by increasing food prices and stimulating large-scale land transactions that deprive local communities of the land and water necessary to grow food”<sup>8</sup>. In this sense, González explains that these policies: i) accelerate transition to fossil fuel-based industrial agriculture, emitting Green House Gases (here-in-after-referred-as-to GHG); ii) degrade local ecosystems; and iii) favor export-oriented business at the expense of small farmers and local food production. In addition, “the life-cycle greenhouse has emissions of many biofuels exceed those of fossil fuels”<sup>9</sup>. González points out that “[t]he explosive growth of the biofuels industry has compromised the right to food by reducing food production and contributing to higher food prices”<sup>10</sup>.

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<sup>5</sup> For a criticism against the imbalance of an EU policy towards biofuels which harms the production of food, see TOMMASIONI, *Fonti Rinnovabili in funzione della 'sostenibilità' (ambientale e alimentare)*, in CERRINA FERONI, FROSINI, MEZZETTI, PETRILLO, *Ambiente, energia, alimentazione. Modelli giuridici comparati per lo sviluppo sostenibile*, Vol. I, Tomo I, Firenze, 2016, www.cesifin.it, pp. 495-505.

<sup>6</sup> The information of this Section is extracted from GONZÁLEZ, *An environmental justice critique of biofuels* (Chapter III), in SALTER, GONZÁLEZ, KRONK WARNER (eds.), *Energy Justice: US and International Perspectives*, Cheltenham, 2018, pp.41-72.

<sup>7</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 41.

<sup>8</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 2.

<sup>9</sup> *Ibidem*.

<sup>10</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 54. See High Level

González defines environmental justice as a social movement and “a paradigm through which to evaluate laws, policies, and practices that have an impact on the environment and on vulnerable populations”.<sup>11</sup> It emerged in the United States in the 1980s —when it was demonstrated the disproportionate concentration of polluting facilities in low-income neighbourhoods of color—. It has developed his own language “in a wide variety of environmental struggles, including efforts to secure equitable access to food, water, land, and energy as well as campaigns to halt ecologically devastating projects, such as hydroelectric dams, mines, and oil and gas development”.<sup>12</sup>

Environmental justice scholars and activists emphasize four distinct components of both environmental and energy justice. They are the following four ones: i) distributive justice: ii) procedural justice: the right of all communities to participate in governmental decision-making regarding projects and policies that affect them; iii) corrective justice: even-handed enforcement of environmental statutes and regulations as well as access to remedies when legal rights are violated; and iv) social justice: the recognition that environmental injustice cannot be separated from other social ills – such as poverty and subordination based on caste, race, gender or indigeneity.<sup>13</sup>

González explains<sup>14</sup> that biofuels are closely related to distributive injustice, “because the benefits are reaped by commercial lenders, financial speculators, oil companies, agribusiness corporations, and affluent consumers, who can maintain their car-dependent, energy-intensive lifestyles by simply replacing fossil fuels with food-based biofuels.<sup>15</sup> The costs are borne disproportionately by the world’s most food-insecure populations who confront rising food prices and eviction from the lands they have traditionally used for farming, foraging, and grazing”.

Biofuels are also relate to procedural injustice, “because the US and EU biofuel mandates are being implemented without an adequate assessment of their environmental and human rights impacts and without any input

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Panel of experts on food security and nutrition of the Committee on world food security (HLPE), biofuels and food security (2013), at 13–15, 55–73.

<sup>11</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 42.

<sup>12</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 7.

<sup>13</sup> For a distinction among those four types of justice in the field of energy, see DEL GUAYO, GODDEN, ZILLMAN, MONTOYA, J. J. GONZÁLEZ, *Introduction. Energy Justice and Energy Law*, Oxford, 2020 (forthcoming).

<sup>14</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, pp. 62–63.

<sup>15</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., recommends seeing *Biofuels and the Globalization of Risk*, *supra* note 3, at 91–92.

from the communities in the Global South who bear the bulk of these impacts. Similarly, the large-scale land acquisitions are transpiring without the free, prior, and informed consent of the affected populations”. Biofuels have to do with corrective injustice, “because the communities deprived of the right to food (by rising food prices) or evicted from their lands (due to land-grabbing) often have no legal recourse either in the country where they reside or in other legal fora”. Finally, biofuels raise social justice issues, “including an international economic order that has historically enriched the Global North at the expense of nature and of the planet’s most vulnerable communities”.

Continuing with the speech, González points out that environmental justice — which “has an important international dimension that provides valuable insights into environmental conflicts between affluent nations (the Global North) and poor and middle-income nations (the Global South)”<sup>16</sup>— is based on human rights, including the fundamental human right to food. This right is recognized by several legal instruments, including Article 25 of the Universal Declaration of Human Rights (1948); Article 11 of the International Covenant on Economic, Social and Cultural Rights (ICESCR: 1966); and Articles 24 and 27 of the United Nations Convention on the Rights of the Child (1990)<sup>17</sup>. Thus, States are required to do the following: i) economic policies which do not deprive people of their livelihoods; ii) to prevent third parties from depriving people of the means to grow or purchase food; and iii) to provide people with jobs.<sup>18</sup>

Finally, González concludes by saying that “[i]n order to assess the impact of biofuels on the right to food, it is important to keep in mind that many biofuel feedstocks can be used as both food and fuel. Biofuels therefore occupy a unique location at the intersection of energy, climate, and food law and policy”<sup>19</sup>.

In theory, substituting biofuels for fossil fuels will mitigate climate change by releasing fewer GHG. However, González points out two aspects that refute this conviction derivate of the cultivation of biofuels: i) it exacerbates climate change because they release more GHGs than fossil fuels; ii) it depresses food production and contributes to higher prices<sup>20</sup>.

The author explains that “[b]iofuels are categorized as first, second,

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<sup>16</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 43.

<sup>17</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, pp. 44-45.

<sup>18</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 45.

<sup>19</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 46.

<sup>20</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 25.

or third-generation depending upon the feedstocks from which they are produced”<sup>21</sup>. These are the definitions of each of the several biofuels<sup>22</sup>:

- i) First-generation: developed from crops that can also be used for food or feed (bio-diesel). It represents 99.85 per cent of the biofuels produced worldwide<sup>23</sup>;
- ii) Second-generation: made from non-edible crop parts, non-food crops cultivated for energy production, or waste products<sup>24</sup>. Some second-generation biofuels may be grown on land that could be used to cultivate food<sup>25</sup>;
- iii) Third-generation: derived from algae have been the slowest to develop due to the algae’s need for immense amounts of water, nitrogen, and phosphorous to reproduce, along, with the high cost of meeting current mandates using these biofuels<sup>26</sup>.

In addition, G. González defends the thesis that “biofuels may generate even more greenhouse gas emissions than fossil fuels due to the clearing of forests and peatlands to plant them, the nitrogen-based fertilizers and petroleum-derived pesticides applied to the growing crops, the petroleum-guzzling machinery used to cultivate and harvest them, and the energy required to convert the plants into fuel”<sup>27</sup>.

“The biofuels policies of the United States and the European Union —says González— are producing environmental injustice in the Global South by ravaging local ecosystems, depressing food production, and depriving vulnerable communities of access to the land and water necessary to produce food”<sup>28</sup>. There is also the problem of land-grabbing<sup>29</sup>.

<sup>21</sup> *Ibid.*

<sup>22</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 47.

<sup>23</sup> *Ibid.* at 45.

<sup>24</sup> *Ibid.* at 44.

<sup>25</sup> *Ibid.* at 46.

<sup>26</sup> See Biofuel.Org.UK, *Third Generation Biofuels* (2010), available at <http://biofuel.org.uk/third-generation-biofuels.html>. In order to avoid the competition between land uses (farming or biofuels), there is need to restrict the promotion of biofuels to those of second or third generation: GUERRA, *Ambiente, energia, alimentaciones. Lo spreco alimentare come paradosso e il ruolo del Diritto*, in FERONI, T. E. FROSINI, MEZZETTI, P. L. PETRILLO, *Ambiente, energia, alimentazione. Modelli giuridici comparati per lo sviluppo sostenibile*, cit., pp. 229-239.

<sup>27</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 48.

<sup>28</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 55.

<sup>29</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, pp. 56-62. See also LATTANZI, VILLAMENA, *Agricoltura ed energia: dallo scontro fra interessi alla logica di 'mutuo sostegno'*, at CERRINA FERONI, FROSINI, MEZZETTI, PETRILLO, *Ambiente, energia, alimentazione. Modelli giuridici comparati per lo sviluppo sostenibile*, cit., pp. 549-558.

González criticism extends to the 2009 Renewable Energy Directive<sup>30</sup> (here-in-after-referred-as-to the 2018 RES Directive), on the promotion of the use of energy from renewable sources. It required that each EU Member State derive at least 10 percent of its transportation fuels from biofuels by 2020.<sup>31</sup> It established sustainability criteria, but they were “purely environmental and do not address the social and human rights impacts of biofuels, including the impact on the right to food. However, in April 2015, in response to concerns about the right to food implications of the diversion of significant amounts of land from food cultivation to biofuels production, the European Parliament imposed a 7 percent cap on the contribution of food-based biofuels to the EU’s biofuel mandate”.<sup>32</sup>

González, proposes the following reforms<sup>33</sup>, “in order to mitigate the environmental injustice caused by the bioenergy policies of the United States and the European Union”<sup>34</sup>: a) compliance with Right to Food Obligations; b) regulate of Corporate Conduct and Financial Speculation; c) reforming International Investment Law; and d) a Moratorium on Land-Grabbing.

#### *4. New sustainability and greenhouse gas emissions saving criteria for biofuels, bioliquids and biomass fuels, within the 2018 European Directive on the promotion of the use of energy from renewable sources*<sup>35</sup>

The European Union passed Directive (EU) 2018/2001, of the European Parliament and of the Council, of 11 December 2018, on the promotion of the use of energy from renewable sources.<sup>36</sup> The 2018 RES Directive fosters sustainability of bioenergy. It includes significant changes to help the biofuels industry to come into terms with global (not only European) sustainability policies. Biofuels help the EU to meet its GHG

<sup>30</sup> Directive on the promotion of the use of energy from renewable resources, Council Directive 2009/28/EC [2009] OJ L140/16 (Renewable Energy Directive).

<sup>31</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 48.

<sup>32</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, p. 52. See *EU Parliament Sets Cap on Crop-Based Biofuels*, Climate Policy Observer (May 4, 2015), available at <http://climateobserver.org/eu-parliament-sets-cap-crop-based-biofuels/>.

<sup>33</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, pp. 63-71.

<sup>34</sup> GONZÁLEZ, *An environmental justice critique of biofuels*, cit., note 1, pp. 63-71.

<sup>35</sup> Section 4 of this contribution tries to provide a systematic and general overview of the new sustainability and GHG emissions savings criteria, and contains limited analysis of each of those criteria.

<sup>36</sup> OJ L 382, of 21 December 2018.

reductions targets. However, biofuel production takes usually place on cropland, previously used for other agriculture such as growing food or feed. Since agricultural production is necessary, that situation it may lead to the extension of agriculture land into non-cropland, including areas with high carbon stock such as forests, wetlands and peatlands. This process is known as indirect land use change (ILUC). Since this may cause the release of CO<sub>2</sub> stored in trees and soil, ILUC risks negating the GHG savings that result from increased biofuels.

New rules were adopted at EU level in 2015 to reduce the risk of ILUC, in both the 2009 RES Directive and the Fuel Quality Directive<sup>37</sup>.

The 2018 RES Directive modifies the sustainability and the GHG emissions saving criteria, in accordance with both the evolution of technological knowledge about the impact of bioenergy on climate change (particular on the reduction of GHG emissions), and the criticism to which the criteria contained in the 2009 European RES Directive were subject.<sup>38</sup>

#### 4.1 *General Purposes*

##### 4.1.1 *The binding overall Union target for 2030 (point a)*

Article 3(1) of the 2018 RES Directive sets a target for the use of renewable energies at EU level, a binding overall Union target for 2030. According to this Article, Member States must collectively ensure that the share of energy from renewable sources in the Union's gross final consumption of energy in 2030 is at least 32 %. The European Commission shall assess that target with a view to submitting a legislative proposal by 2023 to increase it. It must submit such proposal in three circumstances: i) where there are further substantial costs reductions in the production of renewable energy; ii) where needed to meet the EU's international commitments for decarbonisation, or iii) where a significant decrease in energy consumption in the EU justifies such an increase. Member States shall set national contributions to meet, collectively, the binding overall EU target set, as part of their integrated national energy and climate plans<sup>39</sup>.

<sup>37</sup> Directive (EU) 2015/1513 of the European Parliament and of the Council of 9 September 2015 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 (Text with EEA relevance) (OJ L 239, of 15 September 2015).

<sup>38</sup> See, for example, SOIMAKALLIO, KOPONEN, *How to ensure greenhouse gas emission reductions by increasing the use of biofuels? – Suitability of the European Union sustainability criteria*, in *Biomass and Bioenergy*, 8, 35, 2011, pp. 3504-3513.

<sup>39</sup> These plans are regulated by Articles 3 to 5 and 9 to 14 of Regulation (EU) 2018/1999

#### 4.1.2 *Renewable energy obligations (point b)*

The 2018 RES Directive defines ‘energy obligations’. They mean the support scheme requiring the three following possible obligations: i) requiring energy producers to include a given share of energy from renewable sources in their production, ii) requiring energy suppliers to include a given share of energy from renewable sources in their supply, or iii) requiring energy consumers to include a given share of energy from renewable sources in their consumption, including schemes under which such requirements may be fulfilled by using green certificates.<sup>40</sup> These obligations may be imposed by either the EU or by Member States to contribute achieving the renewable targets. Actually, the 2018 RES Directive imposes the following energy obligation, in order to mainstream the use of renewable energy in the transport sector: each Member State must set an obligation on fuel suppliers to ensure that the share of renewable energy within the final consumption of energy in the transport sector is at least 14 % by 2030 (minimum share) in accordance with an indicative trajectory set by the Member State and calculated in accordance with the methodology set out by the 2018 RES Directive.<sup>41</sup>

#### 4.1.3. *Eligibility for financial support (point c)*

The consumption of renewable energies, and in particular of biofuels, bioliquids and biomass fuels, may benefit from financial support.<sup>42</sup>

### 4.2. *When and how to take into account biofuels, bioliquids and biomass fuels, for the three general purposes referred*

The 2018 RES Directive states that energy from biofuels, bioliquids and

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of the European Parliament and of the Council of 11 December 2018 on the Governance of the Energy Union and Climate Action (OJ L 328 of 21 December, 2018)

<sup>40</sup> Article 2 (6) of the 2018 RES Directive. The need of harmonized policies among Member States within the EU, particularly by means of a certification system was soon highlighted after the adoption of the 2009 RES Directive: SURYA BAHADUR MAGAR et al., *Growing trade of bioenergy in the EU: Public acceptability, policy harmonization, European standards and certification needs*, in *Biomass and Bioenergy*, 8, 35, 2011, pp. 3318-3327.

<sup>41</sup> Article 25 (1), in relation with Articles 26 and 27, which contain the methodology to calculate the indicative trajectory.

<sup>42</sup> See DEL GUAYO, *Support for Renewable Energies and the Creation of a Truly Competitive Electricity Market. The Case of the European Union*, in ZILLMAN, GODDEN, PADDOCK, ROGGENKAMP, *Innovation in Energy Law and Technology: Dynamic Solutions for Energy Transitions*, Oxford, 2018, pp. 305-320.

biomass fuels shall be taken into account for the three referred purposes<sup>43</sup>, only if they fulfil some criteria.<sup>44</sup> These criteria relate either to sustainability or to the GHG emissions saving (reduction)<sup>45</sup>. The three purposes above referred will be designated, here in after, as points a, b and c (to follow the terminology of the Directive itself).

However, biofuels, bioliquids and biomass fuels produced from waste and residues, other than agricultural, aquaculture, fisheries and forestry residues, are required to fulfil only the GHG emissions saving criteria, in order to be taken into account for the purposes referred to in points a, b, and c. This provision shall also apply to waste and residues that are first processed into a product before being further processed into biofuels, bioliquids and biomass fuels.<sup>46</sup>

Electricity, heating and cooling produced from municipal solid waste shall not be subject to the GHG emissions saving criteria.<sup>47</sup>

Biomass fuels shall fulfil the sustainability and GHG emissions saving criteria if used in installations producing electricity, heating and cooling. Fuels with a total rated thermal input equal to or exceeding 20 MW in the case of solid biomass fuels, and with a total rated thermal input equal to or exceeding 2 MW in the case of gaseous biomass fuels, shall fulfil the sustainability and GHG emissions saving criteria. Member States may apply the sustainability and GHG emissions saving criteria to installations with lower total rated thermal input.<sup>48</sup>

The 2009 RES Directive stated that energy from biofuels and bioliquids were to be taken into account when measuring compliance with national renewable energies target. It added that it was so, 'irrespective of whether the raw materials were cultivated inside or outside the territory of the Community'.<sup>49</sup> The 2018 RES Directive does not contain this former provision. There are now concerns about the sustainability of the methods used to obtain raw materials outside the territory of the EU. However, the 2018 RES Directive states that the sustainability and the GHG emissions saving criteria shall apply

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<sup>43</sup> See Subsections 4.1.1, 4.1.2 and 4.1.3, above.

<sup>44</sup> Article 29 (1), of the 2018 RES Directive.

<sup>45</sup> Said criteria are laid down in Article 29, paragraphs 2 to 7 and 10. Paragraphs 2 to 7 (both inclusive) refer to the sustainability criteria, and paragraph 10 to the GHG saving criteria.

<sup>46</sup> Article 29(1), second paragraph, in relation with Article 29(10), of the 2018 RES Directive.

<sup>47</sup> Article 29 (1), third paragraph, of the 2018 RES Directive.

<sup>48</sup> Article 29 (1), fourth paragraph, of the 2018 RES Directive.

<sup>49</sup> Article 17(1) of the 2018 RES Directive

irrespective of the geographical origin of the biomass.<sup>50</sup>

### 4.3 Sustainability criteria

#### 4.3.1 *Impact on soil quality and soil carbon. Biofuels, bioliquids and biomass from waste and residues derived from agricultural land*

Biofuels, bioliquids and biomass fuels produced from waste and residues derived not from forestry but from agricultural land shall be taken into account for the purposes referred to in points a, b and c, only where operators or national authorities have monitoring or management plans in place in order to address the impacts on soil quality and soil carbon<sup>51</sup>. This former requirement (related to the need of having plans on soil quality and soil carbon) is a novelty contained in the 2018 RES Directive.

#### 4.3.2 *Protection of biodiversity of biofuels, bioliquids and biomass from agricultural biomass*

Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points a, b and c, shall not be made from raw material obtained from land with a high biodiversity value. Said land must have one of the following statuses in or after January 2008, whether or not the land continues to have that status:

- a) primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed;
- b) highly biodiverse forest and other wooded land which is species-rich and not degraded, or has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes; this is a new criteria introduced by the 2018 RES Directive in comparison with the 2009 RES Directive.
- c) areas designated by law or by the relevant competent authority for nature protection purposes; or for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the

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<sup>50</sup> Article 29 (1), fourth paragraph.

<sup>51</sup> Article 29(2) of the 2018 RES Directive. This paragraph 2 refers to Article 30(3) of the 2018 RES Directive, with regard to the way to report the information about how those impacts are monitored and managed.

International Union for the Conservation of Nature<sup>52</sup>, unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;

d) highly biodiverse grassland spanning more than one hectare that is:  
 i) natural, namely grassland that would remain grassland in the absence of human intervention and that maintains the natural species composition and ecological characteristics and processes; or ii) non-natural, namely grassland that would cease to be grassland in the absence of human intervention and that is species-rich and not degraded and has been identified as being highly biodiverse by the relevant competent authority, unless evidence is provided that the harvesting of the raw material is necessary to preserve its status as highly biodiverse grassland;<sup>53</sup> the exigency of the land “spanning more than one hectare” is new, in comparison with the 2009 RES Directive.

#### *4.3.3 Protection against raw material obtained from land with high-carbon stock*

Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points a, b and c, shall not be made from raw material obtained from land with high-carbon stock. That is the land that had one of the following statuses in January 2008 and no longer has that status:

- i) wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year;
- ii) continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30 %, or trees able to reach those thresholds in situ; and
- iii) land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10 % and 30 %, or trees able to reach those thresholds in situ, unless evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in Part C of Annex V is applied, the conditions laid down in paragraph 10 of this Article would be fulfilled.

This provision shall not apply if, at the time the raw material was

<sup>52</sup> Subject to their recognition in accordance with the first subparagraph of Article 30(4).

<sup>53</sup> Article 29(3) of the 2018 RES Directive. The Commission may adopt implementing acts further specifying the criteria by which to determine which grassland are to be covered by point c. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(3), of the 2018 RES Directive.

obtained, the land had the same status as it had in January 2008<sup>54</sup>.

*4.3.4 Protection of peatland against biofuels, bioliquids and biomass from agricultural biomass*

Biofuels, bioliquids and biomass fuels produced from agricultural biomass taken into account for the purposes referred to in points a, b and c, shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil.<sup>55</sup>

*4.3.5 Protection against unsustainable production in the case of biofuels, bioliquids and biomass from forest biomass*

Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points a, b and c shall meet the following criteria to minimise the risk of using forest biomass derived from unsustainable production.

The country in which forest biomass was harvested has national or sub-national laws applicable in the area of harvest as well as monitoring and enforcement systems in place ensuring:

- i) the legality of harvesting operations;
- ii) forest regeneration of harvested areas;
- iii) that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands and peatlands, are protected;
- iv) that harvesting is carried out considering maintenance of soil quality and biodiversity with the aim of minimising negative impacts; and
- v) that harvesting maintains or improves the long-term production capacity of the forest;

If there were no evidence of the mentioned criteria, the biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points a, b and c, if management systems are in place at forest sourcing area level ensuring the same five aspects above mentioned. However, the need of ensuring (that areas designated by international or national law or by the relevant competent authority for nature protection purposes, including in wetlands

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<sup>54</sup> Article 29(4) of the 2018 RES Directive.

<sup>55</sup> Article 29(5) of the 2018 RES Directive.

and peatlands, are protected), can be avoided (when there are no laws but management systems) when evidence is provided that the harvesting of that raw material does not interfere with those nature protection purposes.<sup>56</sup>

With regard to the requirement of the ‘legality of harvesting operations’, the 2009 RES Directive contained a list of Conventions of the International Labour Organization. The purpose of said list was for the European Commission to check whether the State from where the raw material was obtained had signed them. The check should be part of a periodical report to Parliament by the European Commission. The 2018 RES Directive does not contain any longer said list, but refers in broader terms to the legality of ‘harvesting operations’, which, of course, covers those Conventions and other legal instruments. The legality of harvesting operations affect to acceptance of forest biomass. Only if they are ‘legal’ can they be taken into account, for example, to measure the fulfilment of the renewable targets.

#### *4.3.6 Land-use, land-use change and forestry (LULUCF) criteria in the field of forest biomass*

As the Recitals of the 2018 RES Directive stress, one of the novelties of its content is the inclusion of express criteria on land-use, land-use change and forestry (LULUCF), to fight indirect land change (Indirect Land Use Change or ILUC). The 2019 RES Directive sets limits on high ILUC-risk biofuels, bioliquids and biomass fuels with a significant expansion in land with high carbon stock. These limits «affect the amount of biofuels Member States can count towards their national targets when calculating the overall national share of renewables and the share of renewables in transport. Member states will still be able to use (and import) fuels covered by these limits, but they will not be able to include these volumes when calculating the extent to which they have fulfilled their renewable targets. These limits consist of a freeze at 2019 levels for the period 2021-2023, which will gradually decrease from the end of 2023 to zero by 2030. The Directive also introduces an exemption from these limits for biofuels, bioliquids and biomass fuels certified as low ILUC-risk»<sup>57</sup>. To implement these provisions the European Commission has adopted the Delegated Regulation (EU) 2019/807.<sup>58</sup> It sets specific criteria determining related to ILUC. The

<sup>56</sup> Article 29(6) of the 2018 RES Directive.

<sup>57</sup> <https://ec.europa.eu/energy/en/topics/renewable-energy/biofuels/sustainability-criteria>.

<sup>58</sup> Commission Delegated Regulation (EU) 2019/807 of 13 March 2019, supplementing Directive (EU) 2018/2001 of the European Parliament and of the Council as regards the determination of high indirect land-use change-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed and the certification of low

Commission has also adopted an accompanying report on the status of production expansion of relevant food and feed crops worldwide, based on the best available scientific data.<sup>59</sup>

Biofuels, bioliquids and biomass fuels produced from forest biomass taken into account for the purposes referred to in points a, b and c shall meet the following LULUCF criteria. The country or regional economic integration organisation of origin of the forest biomass: i) is a Party to the Paris Agreement; ii) has submitted a nationally determined contribution (NDC) to the United Nations Framework Convention on Climate Change (UNFCCC), covering emissions and removals from agriculture, forestry and land use which ensures that changes in carbon stock associated with biomass harvest are accounted towards the country's commitment to reduce or limit GHG gas emissions as specified in the NDC; or iii) has national or sub-national laws in place, in accordance with Article 5 of the Paris Agreement, applicable in the area of harvest, to conserve and enhance carbon stocks and sinks, and providing evidence that reported LULUCF-sector emissions do not exceed removals.

If there were no evidence of the fulfilment of these criteria, biofuels, bioliquids and biomass fuels produced from forest biomass shall be taken into account for the purposes referred to in points a, b and c, if management systems are in place at forest sourcing area level to ensure that carbon stocks and sinks levels in the forest are maintained, or strengthened over the long term<sup>60</sup>.

#### *4.3.7 Further actions of the European Commission with regard to the sustainability criteria*

By 31 January 2021, the Commission shall adopt implementing acts establishing the operational guidance on the evidence for demonstrating compliance with the criteria related to the unsustainable production and to LULUCF<sup>61</sup>.

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indirect land-use change-risk biofuels, bioliquids and biomass fuels: OJ L 133, of 21<sup>st</sup> May, 2019.

<sup>59</sup> Report from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions on the status of production expansion of relevant food and feed crops worldwide: COM (2019) 142 final, of 13 March, 2019.

<sup>60</sup> Article 29(7) of the 2018 RES Directive. For an example taken from Brazil, see AIETA, JORDACE, *Il ruolo della biomassa come fonte di energia rinnovabile nella promozione dei Diritti sociali in Brasile*, in CERRINA FERONI, FROSINI, MEZZETTI, PETRILLO, *Ambiente, energia, alimentazione. Modelli giuridici comparati per lo sviluppo sostenibile*, cit., pp. 305-312.

<sup>61</sup> Article 29(8), in relation to Article 29 (6) and (7), of the 2018 RES Directive. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 34(3) of the 2018 RES Directive.

By 31 December 2026, the Commission shall assess whether the criteria related to the unsustainable production and to LULUCF effectively minimise the risk of using forest biomass, on the basis of the available data. The Commission shall, if appropriate, submit a legislative proposal to amend those for the period after 2030<sup>62</sup>.

#### 4.4 Greenhouse gas emissions saving criteria

The GHG emission savings from the use of biofuels, bioliquids and biomass fuels taken into account for the purposes referred to in points a, b and c shall be:

- a) *at least 50 % for biofuels, biogas consumed in the transport sector, and bioliquids produced in installations in operation on or before 5 October 2015;*
- b) *at least 60 % for biofuels, biogas consumed in the transport sector, and bioliquids produced in installations starting operation from 6 October 2015 until 31 December 2020;*
- c) *at least 65 % for biofuels, biogas consumed in the transport sector, and bioliquids produced in installations starting operation from 1 January 2021; and*
- d) *at least 70 % for electricity, heating and cooling production from biomass fuels used in installations starting operation from 1 January 2021 until 31 December 2025, and 80 % for installations starting operation from 1 January 2026.*

An installation shall be considered to be in operation once the physical production of biofuels, biogas consumed in the transport sector and bioliquids, and the physical production of heating and cooling and electricity from biomass fuels has started.

The GHG emission savings from the use of biofuels, biogas consumed in the transport sector, bioliquids and biomass fuels used in installations producing heating, cooling and electricity shall be calculated in accordance with Article 31(1) of the 2018 RES Directive<sup>63</sup>.

<sup>62</sup> Article 29(9), in relation to Article 29 (6) and (7), of the 2018 RES Directive.

<sup>63</sup> Article 29(10) of the 2018 RES Directive.

#### 4.5 *Criteria for electricity from biomass*

The 2018 RES Directive contains new provisions on sustainability criteria for electricity from biomass.

Electricity from biomass fuels shall be taken into account for the purposes referred to in points a, b and c only if it meets one or more of the following requirements:

- a) *it is produced in installations with a total rated thermal input below 50 MW;*
- b) *for installations with a total rated thermal input from 50 to 100 MW, it is produced applying high-efficiency cogeneration technology, or, for electricity-only installations, meeting an energy efficiency level associated with the best available techniques (BAT-AEELs) as defined in Commission Implementing Decision (EU) 2017/1442<sup>64</sup>;*
- c) *for installations with a total rated thermal input above 100 MW, it is produced applying high-efficiency cogeneration technology, or, for electricity-only installations, achieving a net-electrical efficiency of at least 36 %;*
- d) *it is produced applying Biomass CO<sub>2</sub> Capture and Storage.*<sup>65</sup>

For the purposes of points a, b and c, electricity-only-installations shall be taken into account only if they do not use fossil fuels as a main fuel and only if there is no cost-effective potential for the application of high-efficiency cogeneration technology according to the assessment in accordance with Article 14 of Directive 2012/27/EU.<sup>66</sup>

For the purposes of points a and b, this provision shall apply only to installations starting operation or converted to the use of biomass fuels after 25 December 2021. For the purposes of point c, this provision shall be without prejudice to support granted under support schemes in accordance with Article 4 approved by 25 December 2021.<sup>67</sup>

Member States may apply higher energy efficiency requirements than those referred in this provision to installations with lower rated thermal input. It shall not apply to electricity from installations, which are the object

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<sup>64</sup> Commission Implementing Decision (EU) 2017/1442 of 31 July 2017 establishing best available techniques (BAT) conclusions, under Directive 2010/75/EU of the European Parliament and of the Council, for large combustion plants (OJ L 212, 17.8.2017).

<sup>65</sup> Article 29(11), subparagraph 1, of the 2018 RES Directive

<sup>66</sup> Article 29(11), subparagraph 2, of the 2018 RES Directive

<sup>67</sup> Article 29(11), subparagraph 3, of the 2018 RES Directive

of a specific notification by a Member State to the Commission based on the duly substantiated existence of risks for the security of supply of electricity. Upon assessment of the notification, the Commission shall adopt a decision taking into account the elements included therein.<sup>68</sup>

#### *4.6. Other sustainability criteria for biofuels and bioliquids*

For the purposes referred to in points a, b and c, and without prejudice to Articles 25 and 26 of the 2018 RES Directive, Member States shall not refuse to take into account, on other sustainability grounds, biofuels and bioliquids obtained in compliance with Article 29. This is without prejudice to public support granted under support schemes approved before 24 December 2018.<sup>69</sup>

#### *4.7. Derogations*

For the purposes referred to in point c, Member States may derogate, for a limited period of time, from some of the criteria, by adopting different criteria for: a) installations located in an outermost region as referred to in Article 349 TFEU to the extent that such facilities produce electricity or heating or cooling from biomass fuels; and b) biomass fuels used in those installations, irrespective of the place of origin of that biomass, provided that such criteria are objectively justified on the grounds that their aim is to ensure, for that outermost region, a smooth phase-in of the and thereby incentivise the transition from fossil fuels to sustainable biomass fuels.

The different criteria shall be subject to a specific notification by the relevant Member State to the Commission.<sup>70</sup>

#### *4.8 Additional criteria for biomass established by Member States*

For the purposes referred to in points a, b and c, Member States may establish additional sustainability criteria for biomass fuels. By 31 December 2026, the Commission shall assess the impact of such additional criteria on the internal market, accompanied, if necessary, by a proposal to ensure

<sup>68</sup> Article 29(11), subparagraph 4, of the 2018 RES Directive

<sup>69</sup> Article 29(12) of the 2018 RES Directive.

<sup>70</sup> Article 29(13) of the 2018 RES Directive.

harmonisation thereof.<sup>71</sup>

### 5. *Concluding remarks*

The case of biofuels (and bioliquids and biomass) shows the strong relationship between food and energy. Biofuels, bioliquids and biomass are considered to be renewable energies by the European Union. They contribute to the main objective under the 2015 Paris Agreement, that being decarbonizing the energy system. However, when measuring the overall impact of the biofuels, strong criticism emerge against them. They negatively affect to food and to the fight against poverty, since agricultural land is used to obtain raw materials for biofuels, instead. Moreover, the global assessment of the influence of biofuels in the reduction of GHG emissions is, sometimes, negative. The EU is aware of these negative aspects of biofuels, but it is simultaneously committed to promote them, since they are an essential part of a future clean energy paradigm. For that reason, the EU has introduced significant changes in the legislation related to renewable energies. The 2018 RES Directive toughen both the sustainability criteria and the GHG saving criteria. In particular, new provisions are now in force on land-use, land-use change and forestry, to fight indirect land use change. These changes give hope for a right balance between the environmental benefits of a sustainable biofuels industry and other vital aspect of human well-being, such as food.

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<sup>71</sup> Article 29(14) of the 2018 RES Directive.