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Biogas: a powerful and safe enabler of decarbonisation & complementing the zero-pollution ambition of the Green Deal

Biogas and biomethane producers have big expectations and are ready to play their role to deliver on the objectives of the Green Deal. By providing 14% of renewable energy available for final consumption (573,718[1] Terajoule out of 4,054,255[2] Terajoule), biogases are crucial to decarbonise the energy sector and the whole economy. Various independent reports and peer-reviewed studies[3] have shown the large contribution biogas can make in the needed decarbonization However, bioeconomy should not only provide renewable energy, but it should also offer solutions for healthy and secure ecosystems for people as well as all animal and plant species.

The evidence that EBA collected from the biogas sector during its > 10 years of experience shows that proper biogas production based on sequential cropping is a sustainable activity. On top of that, it is a powerful solution leading to decreased greenhouse gas (GHG) emissions, protection of biodiversity and restoration of soil quality through agro-ecological innovation and organic fertilization. Ultimately, if done correctly, sequential-cropping-based-biogas is a sustainable activity that promotes a carbon negative agriculture with increased organic fertilization leading to greater environmental protection.

It should also be noted that diversified revenues from renewable energy facilitate to manage agricultural commodity markets. New sources of income help to stabilise market prices of agricultural commodities and provide greater security for consumers and farmers. The rising potentials have already encouraged investments in farm, rural areas, and agricultural research that led to more sustainable yields[4]. This is beneficial for the overall production of agricultural goods.

The main benefits of sequential cropping production

When done correctly, sequential cropping generates several benefits for the economy, the natural capital and public health:

1. Biogas with sequential cropping is not only carbon neutral but it is carbon negative

Sequential cropping is aligned with food and feed production and prevents indirect land-use change. The Consorzio Italiano Biogas (CIB) developed a pioneering approach which combines agro-ecology and anaerobic digestion[5]. Known as Biogasdoneright®, it brings major reduction of GHG emissions and increased CO_2

[1] [nrg_cb_rw] – EU 27 indigenous production of biogases from anaerobic fermentation in 2018. Accessed last time in May 2020.

[2] [nrg_bal_s] – availability of renewables and biofuels available for final consumption in EU 27 in 2018.

[3] D. Peters et al, *Gas Decarbonisation Pathways 2020–2050*, Guidehouse, 2020; N. Scarlat et al, *Biogas: Developments and perspectives in Europe*, Renewable Energy 129 (2018) 457-472, 2018; W. Terlouw et al, *The optimal role for gas in a net zero emissions energy system*, Navigant, 2019; D. Peters et al., *Assessing the case for sequential cropping to produce low ILUC risk biomethane*, Ecofys, 2016; L. Kemp, *Second Harvest: Bioenergy from Cover Crop Biomass*, Natural Resources Defense Council (NRDC), 2011.

[4] Improved techniques such as minimum tillage, precision agriculture and crop rotations, and new crop varieties have already been introduced and should be further supported to help the agriculture sector to transition towards decarbonization.

5 Biogasdoneright® model was firstly introduced in Italy by Consorzio Italiano Biogas (CIB) as an agroecological transformation of the conventional production to sustainably supply biomethane. Additional crops are grown before or after the harvest of the main crop on the same agricultural land. More information available at https://www.consorziobiogas.it/wp-content/uploads/2017/05/Biogasdoneright-No-VEC-Web.pdf

sequestration in soil via natural photosynthesis. Developing bioenergy with carbon capture and storage (BECCS) innovation will ensure even greater GHG savings and to produce carbon negative biogas.

2. GHG savings from organic digestate use on agricultural land

Biogas production enables recovery of organic materials into digestate. The agriculture sector has already identified several uses for digestate as a fertilizing product, soil improver and bio stimulant. When mineral fertilizers[6] are replaced with an in-house organic digestate, major GHG emissions from chemical industries are prevented. Public and private investors are already supporting research, development, and innovation in the promising field of nutrient recovery and reuse. For instance, Horizon 2020 promotes new pilot projects to identify novel valorisation pathways[7]. A focus group on nutrient recycling[8] was created to assess the agronomic and environmental value of the derived products.

3. Biogas reduces GHG emissions from livestock farming

When based on sequential cropping, agricultural biogas production relies to a lesser extent on manure input from livestock. Also, farmers who use the organic digestate are less dependent on manure for fertilisation purposes. The critique that expanding biogas production will lead to increasing the livestock population is inherently wrong. Furthermore, biogas allows GHG emissions from handling livestock manure to be reduced. When the latter is brought to the closed and controlled environment of a biogas plant, methane is captured and transformed in renewable energy.

4. Restoring healthy soils, rich in humus and carbon content enables to grow nutritious food and to remove CO_2 from the atmosphere

Farmers rely on healthy and fertile land to grow nutritious food and feed. Soil content of humus and carbon are very important indicators to assess soil health and fertility. Soils which are rich in humus are also more resilient to climate change. Building humus in soil is possible when the land is covered with plants all year long. More plants on the field also increase the natural photosynthesis activity and CO_2 removal from the atmosphere. When farmers carry out minimum tillage and other agro-ecological techniques, the CO_2 that has transferred to the land is stored for a long time.

5. Biodiversity conservation

EBA Members understand the need to protect the natural capital and are ready to apply the latest environmental standards and techniques that protect nature and biodiversity. When sequential cropping is done in a regime of crop rotation, also biodiversity is promoted. Conversely, mono cropping systems where only one typical crop is grown should be avoided. We are all prompt to work with the stakeholders and politicians to achieve the best outcome for the natural ecosystems.

Some of those benefits have been evaluated in €/MWh and included in a report from the prospective committee of the French regulator CRE. It says that for each MWh of biomethane produced between 40 and 70€.MWh of positive externalities are generated.[9]

The current policy framework (and the proposed one) is biased

Biogas producers that want to promote their energy as renewable must comply with the provisions laid down in the revised Renewable Energy Directive (EU) 2018/2001 (RED II). The Directive includes strengthened sustainability criteria and supports the shift towards advanced biofuels based on residues and non-reusable and

[6] According to the fertilizing product regulation, fertilizers are divided into organic fertilizers and mineral fertilizers. Organo-mineral fertilizers are a blended version made of natural and chemical inputs.
[7] EBA is project partner in SYSTEMIC and Nutri2Cycle projects.
[8] The final report of the Nutrient Recycling Focus Group has been published.
[9] https://atee.fr/system/files/2019-12/CRE%20Rapport-Gaz%202019.pdf

non-recyclable waste, included in the Annex IX. At the same time, producers that produce renewable energy from agricultural crops must certify their feedstock as climate friendly. The Commission Delegated Regulation (EU) 2019/807 supplements the Directive with criteria to certify low ILUC[10] risk biofuels, bioliquids and biomass fuels. Criteria are laid down in Art. 5, while Art. 6 regulates the auditing and verification requirements for certification.

The current policy framework severely hinders biogas production as it fails to recognise the possibility to grow multiple crops on the same field. In the past, mono crops of maize or other cereal were commonly grown. However, food and feed production are not displaced when the producers adopt sequential cropping. For instance, evidence shows that maize, triticale, wheat, or ryegrass silage can all be produced as additional (second) crop before or after the harvest of the main crop on the same agricultural land.

We warmly recommend the Commission to recognise the low ILUC risk potential of such a practice which should be certified accordingly, as defined by the Delegated regulation (EU) 2019/807. If certified, this feedstock should also be included in the list of feedstocks for advanced biofuels laid down in Annex IX.

Such revision of renewable energy policy should be aligned to the reform of the Common Agricultural Policy (CAP) to ensure policy coherence. The proposed regulation COM(2018) 392 to reform the European Agricultural Guarantee Fund (EAGF) and by the European Agricultural Fund for Rural Development (EAFRD) reintroduces the principle of setting aside a portion of the agricultural area. This system, coupled with the provisions of RED II and ILUC criteria, would generate an incomprehensively inconsistent framework: on one hand set aside reduces the available land to grow food and feed, and on the other hand ILUC criteria promotes their harvest to the detriment of biogas.

We believe that such a framework is extremely burdensome and inefficient. It restricts freedom of producers to organize and operate. They are obliged to grow food and feed even when it will not pay off. Most likely, unsold goods will become waste although Member States should take measures to reduce food waste in line with the 2030 Agenda for Sustainable Development. Finally, operators become even more reliant on CAP expenditures to sustain their activities.

We warmly recommend the EC to recognise that sequential cropping is not only a powerful resource to produce biogas that will help to decarbonise the economy. It also allows farmers to restore and enhance soil quality, while they provide safe space for biodiversity. 4 out of 11 good agro-environmental conditions laid down in Annex III of the proposed regulation COM(2018) 392 promotes soil maintenance and protection[11]. EBA is in favour of an even more ambitious CAP to protect and restore soil quality. EBA proposes to establish a European target for 2030 to restore carbon content in soils and a European target for 2030 to restore soil organic matter.

Renewable Energy potential of biogas

In 2018, indigenous production of biogas from EU 27 amounted to 14% of renewable energy available for final consumption (580,325 Terajoule[12], out of 4,054,255 Terajoule[13]).

Biomethane is a renewable fuel produced via biogas upgrading or biomass gasification. Biomethane can directly replace natural gas in all its existing applications with minor investments. The great advantage of replacing

[10] Indirect Land-Use Change (ILUC)
[11] GAEC 2 «Protection of carbon rich soils»; GAEC 3 «Maintenance of soil organic matter»; GAEC 7 «Protection of soils in winter»; GAEC 8 «Preserve the soil potential».
[12] [nrg_cb_rw] – EU 27 indigenous production of biogases from anaerobic fermentation in 2018. Accessed last time in May 2020.
[13] [nrg_bal_s] – availability of renewables and biofuels available for final consumption in EU 27 in 2018.

natural gas with biogas is that no infrastructure adjustment is needed. **EBA members are ready to work with the European Commission (EC) and all relevant stakeholders to decarbonise the gas supply by 2050.**

Recent estimates found that anaerobic digestion could deliver up to 62 billion m^3 of biomethane by 2050 (Figure 1). We believe that addition 892,800 (+53%) Terajoule of biomethane could be generated once Member States will implement also separate collection of bio-waste[14].

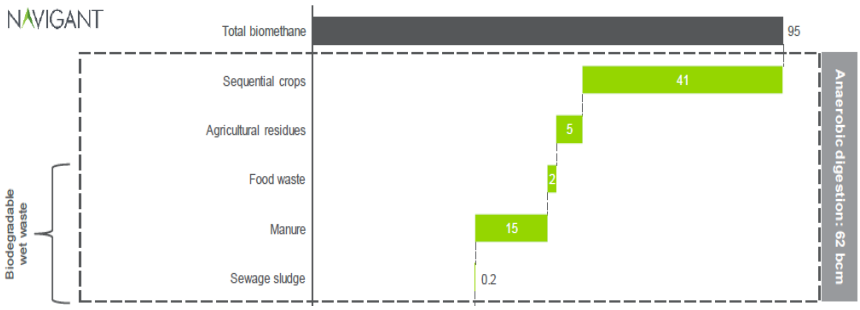

Figure 1 Source: Terlow et al (2019), *Gas for Climate. The optimal role for gas in a net-zero emissions energy system*

Recommendations: a coherent policy framework should enable climate targets to be met & environmental management and protection.

EBA acknowledges the need to protect human health, the environment, and the related ecosystem services, while providing renewable energy to decarbonise the economy. However, we consider that the effects of current (or proposed) legislation is inefficient as it restricts freedom of producers to organize and operate, leads to generation of food waste, hinders farmers' competitiveness, and undermines biogas potentials.

A coherent and supportive policy framework should recognise the benefits of biogas and the capacity to deliver on the objectives of the Green Deal. We warmly invite the **EC and all the stakeholders to work together to find the way to align biogas from agriculture with the Green Deal.** Biogasdoneright®[15] model could be used as a benchmark to set up minimum requirements to integrate safely and sustainably biogas with production of food and feed.

EBA and all its members are ready to engage in the challenge to drastically reduce GHG emissions by 2050. We are willing to offer our experience and to take part in a constructive dialogue over the long term. Our final goal is to be part of a cleaner system where safe recycled products offset the sourcing of finite materials. Where organic fertilization and agro-ecology replace harmful practices. Where the society does no longer put itself at the risk of climate change and pollution. And where the natural capital is protected.

EBA proposes to

- Revise Delegated regulation (EU) 2019/807 so that sequential cropping can be certified for the production of low ILUC risk biofuels.
- Revise Annex IX of RED II to include secondary crops, grow under sequential cropping conditions, in the list of feedstocks for the production of advanced biofuels.
- Revise GAEC 2 and GAEC 3 of Annex III of the Proposal for a Regulation reforming Common Agricultural Policy to set a European target for 2030 to restore carbon and soil organic matter in agricultural soil.

14 Bio-waste is the organic fraction of municipal solid waste after separate collection, defined in article 1, point (3), letter (b) of Directive (EU) 2018/851.

15 https://www.consorziobiogas.it/wp-content/uploads/2017/05/Biogasdoneright-No-VEC-Web.pdf