## New Soil Strategy - healthy soil for a healthy life

The European Biogas Association welcomes the roadmap of the New Soil Strategy, and calls on the European Commission to strengthen its policy by:

1. Recognising that renewable gas offers numerous benefits for soil that would boost the EU capacity to achieve the commitment of land degradation neutrality
2. Exploring the best practices and bottom-up approaches to save organics in soil and reduce the carbon footprint of agriculture
3. Promoting their replication across the EU and ensure a long-term sustainable development of rural areas that care for the preservation of soil quality and biodiversity

The European Biogas Association (EBA) is glad to share its vision on the role of renewable gas to help the European Commission in the updating of the EU Thematic Strategy on Soil.

EBA is a network of national associations, private companies, universities and research centres. EBA operates in Brussels for more than 10 years and it allows politicians, public authorities, investors and other stakeholders to exchange information, ideas and statistics with the European main players of the renewable gas sector.

Our partners are experienced managers, engineers, researchers, lawyers, agriculture practitioners, plant operators and gas distribution system operators. Renewable gas is a multi-disciplinary and cross-sectoral activity that involves many different actors across the whole society. Nevertheless, the value chain of renewable gas is usually national or regional. Renewable gas is a powerful enabler of circular economy and local sustainable development. All the actors operating in renewable gas are moved by an inner desire of sustainability and we believe that renewable gas should be a cornerstone of the European Green Deal vision. We expect that production and consumption renewable gas will continue to grow in Europe in 2030 and 2050 because it is a clean source of renewable energy that is crucial in many economic sectors. Heavy duty transportation, maritime and aviation rely to a very large extent on renewable gas to decarbonise and depollute their operations and products. At the same time, renewable gas offers great opportunities for heating and cooling, energy intensive industries and the power sector. Renewable gas also offers a cost-effective heat and electricity decarbonisation solution for domestic and industrial consumers that are located off-the-gas grid, for instance in rural areas. A significant share of rural dwellings in the EU currently rely on heating oil and coal for heating purposes. Switching away from more polluting solid and liquid fuels like heating oil and coal to renewable gas offers CO2 savings and improves local air quality.

Agriculture is a major contributor of renewable energy. In 2010, 10% of renewable energy came from agriculture[1] and its overall production has increased by 27% in 2018[2]. Renewable energy and biogas production help farmers to manage more efficiently and more effectively their waste and residues, thereby reducing the risks from pollution and valorising the organic resources from farmland. Anaerobic digestion can also create local jobs. Between 200 000 to 275 000 direct jobs and another 300 000 to 400 000 indirect jobs could be created by 2030[3].

Rural areas cannot rely exclusively on landscape features in the future. Although they have been destinations for tourism and leisure for long time, the COVID-19 crisis has revealed the instability of this sector and the costs involved in adaptation. Rather than relying just on tourism, renewable gases empower the rural areas to diversify their activities and develop the local circular economy, for instance through nutrient recycling and reuse innovation.

Health, fertility and quality of soil are also crucial elements for the long-term sustainable development of rural areas. Sustainable renewable gas production through for instance the Biogasdoneright approach aims to restore soil quality and is based on two elements:

1) Adopting cover crops

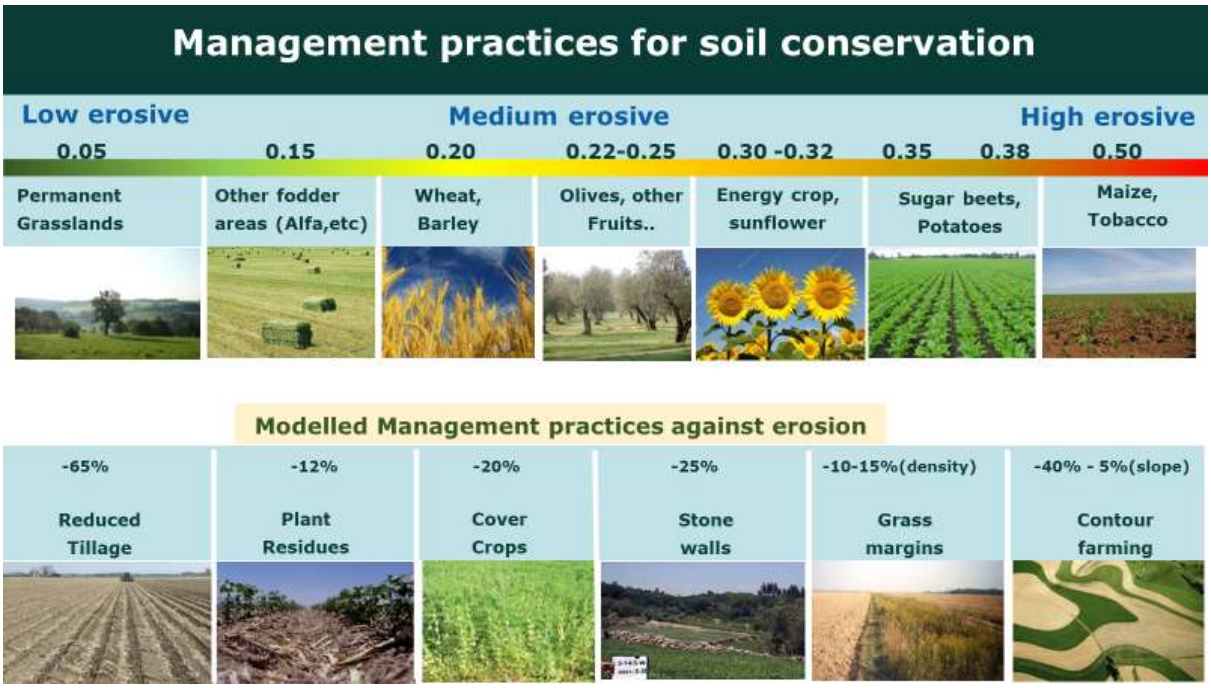
2) Recarbonising soil with digestate which replaces the use of mineral fertilizers

Cover crops[4] are part of a farming system where an additional (second) culture is grown before or after the harvest of the main crop on the same agricultural land with the aim of enhancing soil quality and fertility by preventing soil erosion (see Figure 1) and compaction due to climate factors - e.g. floods or draughts, frost or burnt - and by promoting soil biological, chemical and physical

[1] European Union, Renewable energy in EU agriculture EPRS | European Parliamentary Research Service
[2] Eurostat – SHARES (Renewables)
[3] Guidehouse (2019), *Job creation by scaling up renewable gas in Europe. Gas for Climate* https://gasforclimate2050.eu/?smd_process_download=1&download_id=275
[4] Panagos et al. have assessed the beneficial effect of cover crops to prevent soil erosion. They concluded that by extending cover crops to 35% of European arable lands would allow to reduce risk of soil erosion by 40%.
Panagos et al. (2015), *Estimating the soil erosion cover-management factor at the European scale* https://www.sciencedirect.com/science/article/pii/S0264837715001611

activity. Cover crops are not normal winter crops or grassland but are sown specifically to protect bare soil in winter - and early spring - after the harvesting of summer crops. The economic interest of the cover crops is low – its main goal is to protect soil and nutrients. However, their value increases if renewable energy policies allow their use for renewable energy production[5,6,7] and if incentive schemes recognise their land-base carbon removals[8].

**Figure 1. Management practices for soil conservation**




**Source: Panagos et al (2020), Soil-related indicators to support agri-environmental policies**

Anaerobic digestion is used to transform the organic matter contained in the feedstock into biogas but also into digestate. Anaerobic digestion is also used in industry to handle wastes very high in Chemical oxygen demand, and as a treatment process for sewage sludge after an aerobic waste water treatment. Digestate which complies with national and European legislation and voluntary

[5] A study by Navigant from 2019 outlines the renewable energy potential in Europe from cover crops. They call them sequential crops. Navigant estimates that with sequential crops it can be possible to produce 41 bcm of natural gas equivalent of renewable gas – i.e. biomethane.
Navigant (2019), *Gas for climate. The Optimal Role of Gas in a Net Zero Emissions Energy System*.
https://www.europeanbiogas.eu/wp-content/uploads/2019/11/GfC-study-The-optimal-role-for-gas-in-a-net-zero-emissions-energy-system.pdf

[6] WWF and GRDF (2020) *Méthanisation agricole : quelles conditions de durabilité de la filière en France*
https://www.wwf.fr/sites/default/files/doc-2020-03/20200317_Rapport_Methanisation-agricole_WWF_GRDF-min.pdf

[7] Commission de régulation de l'énergie (CRE) (2019), *Le verdissement du gaz*
https://www.inrae.fr/sites/default/files/pdf/rapport-sur-le-verdissement-du-gaz-prospective-cre-1.pdf

[8] Marsac et al. (2019), *Optimisation of French energy cover crop production in double cropping systems for on-farm biogas use*

product specifications can be used as an organic fertiliser or soil improver in agriculture, either in a liquid form (about 5–15 % dry matter) like manure, or in a semi-solid form (10–30 %) like peat. It can be also further upgraded e.g. by composting, drying and/or pelletising, precipitation of phosphate salts, and ammonium stripping.

Primary effect of digestate application is the replacement of mineral fertilizers. Secondarily, digestate has substantial potential in the rehabilitation of degraded soils by increasing the storage of soil organic matter, enhancing water holding capacity, and providing nutrients for boosting plant growth. Digestate application is also very effective to sequester carbon in soil. A recent study on the effects of anaerobic digestion of bio-waste, including agriculture residues, concluded not only that the use of digestate favour carbon sequestration. The authors also concluded that digestate use reduces $CO_2$ emissions by 27% as compared to the incorporation of maize silage[9].

Anaerobic Digestion is also an important solution to prevent methane emissions from manure. The fermentation of farmyard manure in biogas plants is an efficient way to reduce agricultural greenhouse gas emissions from storage tanks for manure. According to the German Biogas Association, this utilization already saves greenhouse gas emissions of about 2.19 million t CO2 equivalents each year in Germany.

Perennial crops could also offer many benefits for soil protection, prevention of erosion. Many perennial crops offer an alternative pathway to achieve the target of land degradation neutrality and ongoing research is already offering interesting results. Silphium Perfoliatum, Sida and perennial energy grasses (e.g. tall wheatgrass, reed canary grass, etc.) have the advantage that they will not require tillage and at the same time they provide a year-round soil cover which creates a habitat for wild animals and soil biota. These crops have also a high nutrient uptake capacity and thus they are very effective to prevent leaching of nutrients. In addition, cultures such as Silphium Perfoliatum form colourful flowers and offer a good habitat for pollinators.

[9] Béghin-Tanneau R, Guérin F, Guiresse M, Kleiber D, Scheiner JD. (2019). *Carbon sequestration in soil amended with anaerobic digested matter*. Soil and Tillage Research. 192. 87-94.