



POLICY BRIEF

BIOGAS

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Produced through the anaerobic digestion or gazification of agricultural residues, energy crops, sewage sludge, biodegradable wastes and wood residues, biogas is a versatile renewable fuel that can be used in several ways. Sustainable biogas systems include processes for treatment of waste, for environmental protection, for the upgrade of low-value residues to higher-value material. Furthermore, biogas can be used to provide heat, electricity and in combined heat and power plants (CHP) to generate both. Its dispatchability can facilitate the further penetration of variable renewables in the grid.

When upgraded to biomethane, biogas can be injected in the existing gas network and used for any energy or industrial uses. European biogas market is established and mature: biogas consumption has grown 25 times since 1990 reaching a gross inland energy consumption of 16.826 Ktoe produced in 17.783 plants.

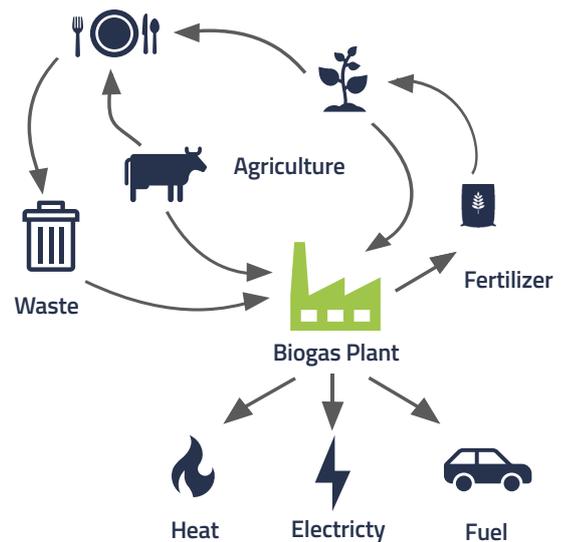
EVOLUTION OF THE GROSS INLAND ENERGY CONSUMPTION OF BIOGAS IN EU28

(Ktoe) Source: EUROSTAT

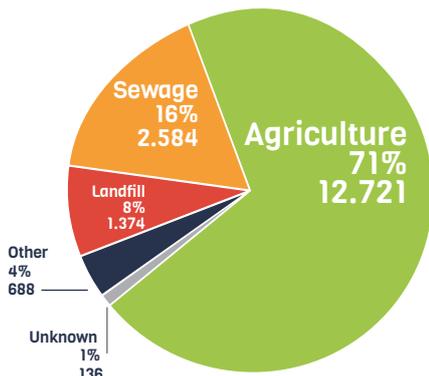


Biogas and the circular bio-economy

In Europe, up to 70% of the feedstocks used for biogas production come from the agricultural sector and include manure, energy crops and agricultural residues. Utilisation of agricultural residues such as manure is significant in countries where the animal husbandry and dairy sectors are developed. Biogas provides a profitable slurry management solution while creating new business opportunities in rural areas suffering from depopulation.



The main output of anaerobic digestion (AD) plants is biogas for energy production such as heat, power and transport fuels. From the same process, digestate (the end-product of the digestion process) can be optimized and used as organic fertilizer. Its use replaces the energy-intensive production of mineral fertilizers and closes the loop: nutrients are recirculated into the soil and ensure optimal supply to crops. Furthermore, the use of digestate as soil improver together with cover crops can yield carbon sequestration volumes in soil.



DISTRIBUTION OF BIOGAS PLANTS BY FEEDSTOCK IN EUROPE* IN 2017

(%, number of plants) Source: EBA

*EU28, Switzerland and Norway

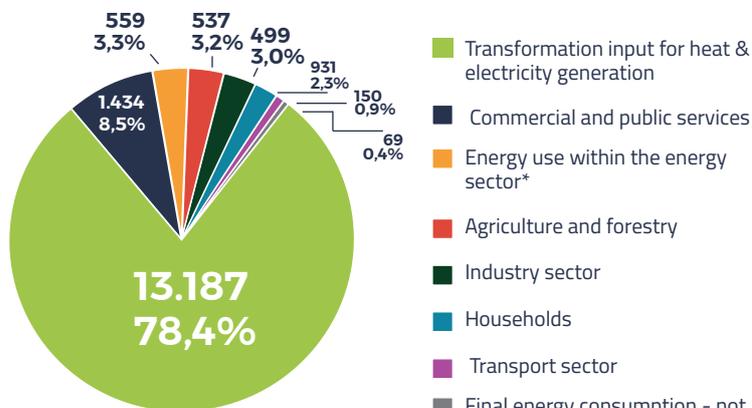
Towards a carbon neutral economy

A clean and local source of energy used by several productive sectors, biogas has a significant role in shifting to a sustainable decarbonised society. Only in 2017 thanks to biogas the equivalent of annual emission of Bulgaria were saved (around 61 Mt CO₂ equivalent*). To date, the most common use of biogas is in a non-upgraded form for electricity generation (59%) and heat production. Biogas is used for industrial applications and to heat /power commercial buildings and agricultural holdings. Trends suggest that its efficient use in combined heat and power plants (CHP) and biogas upgrading on one plant to meet heat demand will become mainstream.

*Considering the EU fossil fuel mix of 2017 and the biogas GHG emission average based on the feedstocks.

BIOGAS GROSS INLAND ENERGY CONSUMPTION BY END-USE IN 2017 IN EU28

(Ktoe, %) Source: Eurostat



* Mainly the biogas consumed as energy for support operations in biogas gasification plants (535 ktoe)

** Distribution losses = 66 ktoe

Biomethane: Greening the gas grid and transports

Increasingly, existing anaerobic digestion plants are converted from power generation to upgrading to biomethane. New biomethane plants have started operations in several EU countries, their number tripled since 2011. Biomethane, has same characteristics to natural gas and can therefore replace it in all its uses. With the right incentives, biomethane is a commercially viable fuel: it can rely on existing natural gas infrastructure and it contributes to reaching European climate targets by reduced CO₂ emissions and improved air quality.

EVOLUTION OF THE NUMBER OF BIOMETHANE PLANTS IN EUROPE*

Source: EBA



*EU28, Switzerland and Norway

our messages

- 1 Introduce a favourable legislative framework to scale up biomethane production** - to comply with Paris agreement objectives, the EU should adopt a holistic approach to favor the introduction of a target for biomethane production in the EU should be accompanied by priority access for renewable methane into the gas grid.
- 2 Phase out fossil fuel subsidies and promote a credible carbon price** - For biogas and biomethane to become competitive, fossil fuels subsidies must be completely phased out. A larger utilization of biogas would be adequately supported by the introduction of a carbon price internalizing the negative externalities of local and global pollution.
- 3 Make agriculture more resource-efficient and sustainable** - The Common Agricultural Policy must adequately recognize the benefits of biogas production for rural development. Not only it provides low-carbon alternatives for heating and electricity but also an alternative income for European farmers. Use of digestate as bio-fertilizers should be incentivized. This will help reducing costs and emissions caused by mineral fertilizers and lessen dependence on scarce critical raw materials such as phosphorous.