



# BIOGAS

Biogas is a renewable energy source with enormous potential to address environmental, energy, and sustainability challenges. It is a versatile and sustainable form of energy that is produced through the anaerobic digestion of organic materials, such as agricultural residues, food waste and wastewater. Biogas not only provides a renewable source of electricity and heat but also plays a crucial role in waste management and reducing greenhouse gas emissions. This fact sheet provides an overview of biogas as a renewable energy source, explaining how it is produced, its components, and its environmental and economic benefits.



**BIOGAS:** Biogas is a renewable energy source produced through the anaerobic digestion of organic matter, such as agricultural waste, animal manure, and sewage, by microorganisms.

**MAIN COMPONENT OF BIOGAS:** Methane (CH<sub>4</sub>) is the primary component of biogas, typically constituting 50-75% of its composition.

**BIOGAS PRODUCTION AND PROCESSES:** Biogas is produced through a natural biological process called anaerobic digestion, where microorganisms break down organic matter in the absence of oxygen.

**MAIN STEPS IN BIOGAS PRODUCTION:** The main steps include feedstock preparation, anaerobic digestion, gas collection, and gas utilization.

**FEEDSTOCK FOR BIOGAS PRODUCTION:** Organic materials such as agricultural residues, animal manure, food waste, and sewage are common feedstocks. But almost every organic waste can be utilised for biogas production.

**MULTIPLE TYPES OF FEEDSTOCK IN A BIOGAS SYSTEM:** Using a mix of feedstocks can enhance nutrient balance and improve gas production efficiency.

**BIOGAS APPLICATIONS:**  
After several cleaning and purification steps, biogas can be used for cooking, heating, electricity generation, and as a fuel for vehicles.

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**BIOGAS IN INDUSTRIAL PROCESSES:** Biogas can be used in various industrial applications, such as heat generation and powering equipment.

**ENVIRONMENTAL BENEFITS:** Biogas helps reduce greenhouse gas emissions by capturing methane from organic waste and converting it into a usable energy source.

**IMPACT OF BIOGAS ON WASTE MANAGEMENT:** Biogas technology facilitates the effective management and recycling of organic waste, reducing the need for landfill disposal.

**ECONOMIC VIABILITY:** Biogas projects can be economically viable, especially when considering factors like reduced energy costs, waste management savings, and potential revenue streams.



### Good practice

**Village Kněžice** (energy self sustainable village)  
(<https://obec-knezice.cz/obec-knezice/energeticky-sobestacna-obec>)



**Linking fishery with biogas plants** (<https://naschov.cz/vyuziti-odpadniho-tepla-k-chovu-ryb/#:~:text=Bioplynov%C3%A9%20stanice%20se%20staly%2b%C4%9B%C5%BE%20nebo%20k%20su%C5%A1en%C3%AD%20rostlin%C3%A9%20produkce>)



### ...IS MUCH OLDER THAN FOSSIL FUELS?

Microorganisms that produce biogas are among the oldest forms of life on Earth, more than three billion years older than the plants and animals that have become today's fossil fuels.

### ...IS A RENEWABLE ENERGY SOURCE?

Biogas is produced through the anaerobic digestion of organic matter, such as agricultural waste, manure, and sewage. Unlike finite fossil fuels, the sources of biogas are abundant and continuously generated, making it a sustainable and renewable energy option.

### ...REDUCES GREENHOUSE GAS EMISSIONS?

The process of producing biogas helps in the decomposition of organic waste, preventing the release of methane, a potent greenhouse gas, into the atmosphere. By utilizing biogas as an energy source, we not only generate clean energy but also contribute to mitigating climate change.

DID YOU  
KNOW THAT  
**BIOGAS**  
?

### REFERENCES:

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