



Why Biogas

Energy is a key input for eradicating poverty and ensuring food security. Today, 2.5 billion people worldwide rely on traditional biomass fuels (wood, charcoal, and dung) as their primary source of energy for cooking and heating, and almost 1.6 billion people have no access to electricity.

The Ugandan Biogas Sector

Currently, an estimated number of over 7,000 domestic biogas plants are in operation all over Uganda, while there are some dozens of institutional plants e.g. built for schools and universities. So far, the commercial sector has been rarely addressed which leaves multiple options for businesses and investors in the future.

For the domestic and institutional sector in Uganda, mostly these three plant models are being built: floating drum system, tubular system and fixed dome type. All of them keep the environment free of organic wastes, are easy to use and convenient to operate, are time-saving and reduce smoke-related illnesses often associated with the use of firewood.



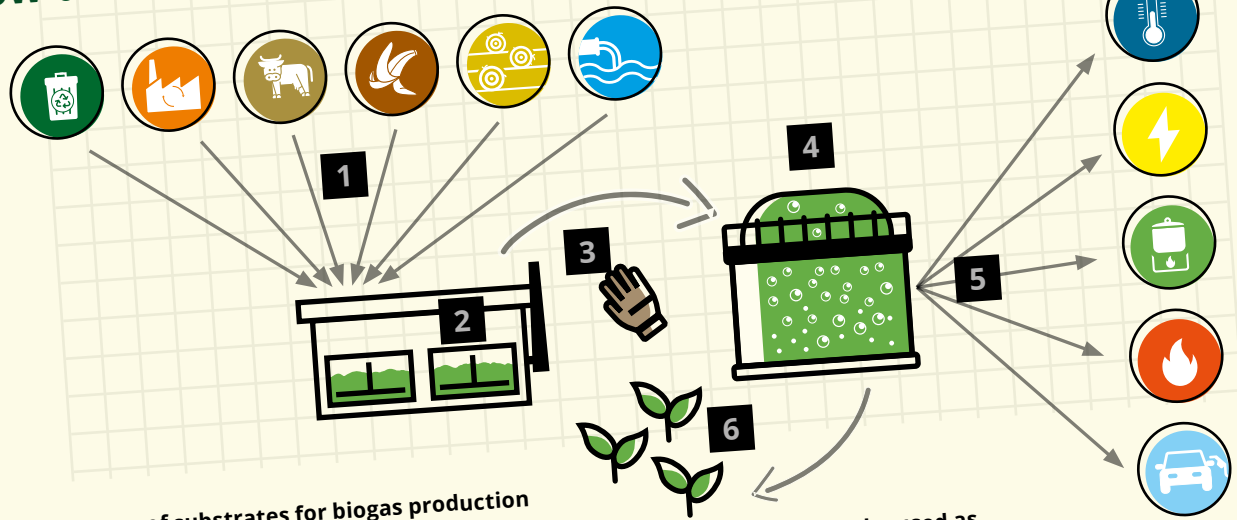
What is Biogas?

Biogas typically refers to a mixture of different gases produced by the breakdown of organic matter in the absence of oxygen. Technically, biogas can be produced from any type of organic material; however, biogas is mostly produced from waste or discarded material with organic content. This waste includes agricultural waste, manure, municipal waste, plant material, sewage, green waste, and food waste. Biogas is a renewable energy source produced by anaerobic organisms through the anaerobic digestion of organic material inside a closed system or by the fermentation of biodegradable materials.

Usage of Products from Biogas Plants

Among the renewable energy sources, biogas is the genuine all-rounder; it provides electricity, heat, gas, and fuel for gas-powered vehicles and can be used for lighting and cooking in residential homes. Flexibility is achieved through the production of a primary energy source, namely methane (CH₄).

How does a biogas plant work?



- 1** Different types of substrates for biogas production
 - Municipal organic waste
 - Industrial and commercial organic waste
 - Animal by-products
 - Vegetable by-products
 - Agro residues
 - Sewage
- 2** Collection, separation and storage of substrates
- 3** If needed, pre-treatment
- 4** Anaerobic digestion in the digester

- 5** Biogas output to be used as
 - Heat/cold production
 - Electricity production
 - Clean cooking
 - Biomethane
 - Fuel
- 6** Usage of digestate as high-quality fertilizer

Benefits of biogas

WASTE TREATMENT BENEFITS

- ▶ natural waste treatment process
- ▶ requires less land than aerobic composting
- ▶ reduces disposed waste volume to landfill
- ▶ encourages a circular economy

ENERGY BENEFITS

- ▶ net energy-producing process
- ▶ generates high quality renewable energies and fertilizer
- ▶ numerous end-use applications (heat, power, fuel or gas)
- ▶ less dependence on fossil fuels
- ▶ clean cooking

ENVIRONMENTAL BENEFITS

- ▶ significantly reduces greenhouse gas emissions
- ▶ eliminates odours
- ▶ produces nutrient-rich organic fertilizer (bio slurry)
- ▶ maximizes recycling
- ▶ reduces soil and water pollution
- ▶ avoids deforestation
- ▶ reduces dangerous germs for humans and animals

SOCIAL BENEFITS

- ▶ increase of income
- ▶ employment opportunities especially in rural areas
- ▶ empowerment of women
- ▶ low-cost solution
- ▶ reduces indoor pollution and health risks

Biogas and Clean Cooking

In Uganda, many households without access to grid-based electricity or gas for cooking use traditional cook stoves which are typically fuelled by wood or charcoal. They generate considerable indoor air pollution. In addition, deforestation is a big problem in Uganda and growing future challenge. Biogas can serve as a great solution here: Cook stoves fuelled with biogas provide complete combustion, significantly reducing health and environmental problems.

About UNBA

The Uganda National Biogas Alliance (UNBA) is the umbrella organization for the biogas sector in Uganda. The non-government, non-profit organization was founded in 2014. Under the vision "Be a leading driver for a commercially viable biogas sector in Uganda and beyond", UNBA's main goal is to promote biogas all over Uganda and improve the business environment of its members.

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