

# Bio4HUMAN - Identifying bio-based solutions for waste management applicable to the humanitarian sector

## Bio-Based Solution Info Sheet

### DIGESTER TECHNOLOGIES (BIOGAS)



#### Baseline alternative

Traditional waste management.



#### General description

A biogas digester is an airtight container that facilitates the anaerobic digestion of organic waste to produce biogas, a renewable energy source. It's a sustainable method for waste management, converting materials like animal manure, food scraps, and agricultural residues into usable energy.

As this waste decomposes, it produces a gas called biogas, which is a mix of methane and carbon dioxide.

- This gas can be burned to cook food, heat homes, or generate electricity.
- What's left behind in the tank is called digestate. The digestate is always composed of 2 fractions: solid and liquid. The solid fraction can be composted or used as an enhancer in composting process. The liquid fraction can be used directly or after a stabilization.
- The process is sustainable, reduces odours, and turns waste into useful energy and nutrients.
- It's especially helpful in rural or off-grid areas, where it can reduce reliance on firewood or fossil fuels.
- Biogas digesters work best with a steady input of organic material and stable temperatures — usually warmer climates are ideal.



#### Cost

The price is indicative and depend on the type of technology, size and material use to build the biogas system.

Initial construction and installation costs: 5000 €.Ongoing/recurring annual costs: 300 €



#### Environmental aspects - added value

- Reduces greenhouse gas emissions by capturing methane that would otherwise escape from decomposing waste on landfills.
- Decreases reliance on fossil fuels by providing a renewable source of energy
- Prevents pollution by safely treating organic waste, reducing runoff into soil and water bodies.
- Produces organic fertilizer, which improves soil health and reduces the need for chemical alternatives.



#### Additional comments

- Can be integrated into a fully closed-loop system for the sustainable management of some types of waste at a very localised level.
- Can be designed at different scale levels. Perhaps some basic training on the setup and maintenance is needed
- Safety considerations: Hygienic issues when dealing with waste and digestate, especially with manure and human waste; Safety signs, locks, logbooks and gas alarms are required.



#### SCAN FOR BIO-BASED SOLUTIONS PORTFOLIO OF ALL SOLUTIONS

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