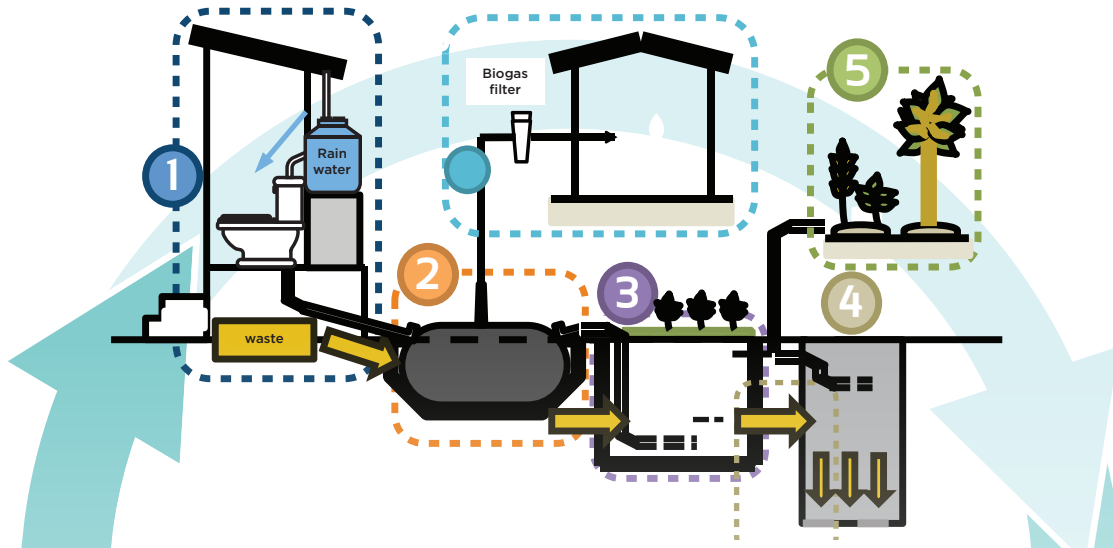


# Waste water treatment

## Households, institutions and communities

Sistema.bio offers a productive alternative for waste water treatment, renewable energy and nutrient recycling at households, institutions and communities, providing improved access to sanitation services. Sistema.bio is a modular system that treats organic waste by integrating anaerobic digestion reactors with biological aerobic filters, generating renewable energy (biogas) and recycling nutrients.



1

**LATRINE:** The system is based on water. The water discharge can happen through a tank or with buckets, using three times as much water as the defecation.

2

**ANAEROBIC REACTOR:** The reactor receives the waste mixed with water from the toilet. Here the waste decomposes itself through a series of bacteria in the absence of oxygen. The organic components and pathogens are significantly reduced during this treatment time. This process produces methane-rich biogas and a potent organic fertilizer. The biodigester is made of highly resistant geomembrane, it exists in a variety of modular sizes, allowing for unique applications according to the needs and characteristics of the place.

3

**ANAEROBIC TREATMENT TANK:** The manure is sent to a biofilter tank. This tank is made of the same geomembrane than the anaerobic reactor. The tank is filled with gravel, sand and a substrate in which plants that feed themselves from the organic charge of the treated water are sowed.

4

**INFILTRATION PIT:** The waste water effluent from the anaerobic-aerobic system is sent to a four meter deep infiltration pit, whose size depends on the phreatic level, and is filled with gravel. The pit allows the already treated water to return to earth in a safe manner.

5

**AGRICULTURAL PRODUCTION:** The use of organic fertilizer (biol) improves the productivity of fields, generating important savings in the agricultural production process. Although the system eliminates more than 90% of the pathogens. In the case of human waste, it is recommended to exclusively use biol on corn fields, trees, forage pasture, and adornment plants for security reasons.

6

**BIOGAS USE:** The biogas is brought to the place where it will be used using a flexible hose or PVC pipe. The biogas can be used in the kitchen, the boiler, or for adapted gasoline motors, when there is enough biogas.



### APPLICATIONS OF WASTE WATER TREATMENT:

- Households, multi-family units and small communities
- Micro-, small- and medium-sized companies and public facilities
- Public and pay-per-use bathrooms
- Refugee and other emergency camps
- Decentralized urban and peri-urban treatment systems

# Sistema.bio program

Our users have the opportunity to improve their productivity and their living conditions by saving money through the displacement of fuels and fertilizers, and progressive elimination of smells, flies and contamination.

We build capacity through personalized technical monitoring and training workshops on the use and maintenance of the biodigester for the whole family.

## CAPACITY BUILDING



We make sure the biodigesters work properly through visits after installation.

We document each installation in our digital client database, providing the best personalized client service possible, while generating data to calculate the social and environmental impact.

The Sistema.bio program is based on our easy-to-install technology, combined with financing packages, training and monitoring. It provides a turnkey package which produces biogas and organic fertilizer (biol) at the local, regional or national level. This Sistema.bio technology generates important benefits in the fight against climate change, health, savings, and productivity. These benefits are in turn aligned with national and international sustainability goals.

Sistema.bio® is a Mexican social enterprise that provides small and medium farmers with renewable electricity, mechanical and thermal energy for their productive and domestic activities through electrical generators and other biogas-adapted accessories. The combination of our patented and prefabricated biodigester in a technological package with Sistema.bio's distribution model gives access to professional and high quality biogas systems all over the world. Started in 2010, our model has been proved in nine countries in Latin America and the Caribbean, where more than 13,000 are benefiting from our technology. This proves the market demand, scalability, business model and potential for 200 million additional farms to produce renewable energy.

“ So here it helped a lot because now all the waste goes to the Biobolsa, all the waste goes there and as it decomposes itself it produces methane gas, which is very useful for our school's canteen. This gas is used to produce the kids' food.

**School Principal, Tlaxcala** ”

“ I like going to the bathroom here because I am not contaminating the environment.

**Student, Tlaxcala** ”

