



# A regional enterprise to commercialize an integrated technology for waste water treatment and biowaste conversion in eastern Africa

## Preamble

In the wake of urbanization and rapidly expanding agro-process businesses [such as slaughterhouses, tanneries, breweries, and others], environmental pollution, increased greenhouse gas emissions (GHGs), and contamination of water sources due to inadequate waste management have become the norm. There is generally little awareness on the environmental and socio-economic consequences of polluting the environment, since proper management of industrial waste is perceived to be expensive, and enforcement of laws is weak.

The Environmental consortium supported under BioInnovate Africa (Phase I) developed and piloted integrated agro/bio-waste conversion and treatment technologies at City Abattoir, Kampala–Uganda with slaughterhouse waste; Modjo Tannery–Ethiopia with tannery wastewater; and Banana Investments Limited–Arusha, Tanzania with winery wastewater. The technologies convert agro/biowaste into useful products (clean energy, fertilizer and cleaner/safer water for reuse or discharge) thereby reducing the carbon footprint, dependence on fossil fuel, providing nutrient-rich fertilizer for improved agricultural productivity, and protecting freshwater resources. Moreover, in the absence of strong enforcement of legislation, the useful products act as incentive to comply to environmental standards. This project aims to commercialise these novel technologies for waste water treatment and biowaste conversion in eastern Africa.

### BioInnovate Africa (Phase I) projects



City Abattoir, Kampala–Uganda with slaughterhouse waste



Banana Investments Limited–Arusha, Tanzania with winery wastewater.



Modjo Tannery–Ethiopia with tannery wastewater;

### Agro/biowaste is converted to:



Clean energy



Fertilizer



Cleaner/safer water

### Benefits of this conversion:



Reduces dependence on fossil fuel



Fertilizer for improved agricultural productivity



Protecting freshwater resources



Reducing the carbon footprint,

## The technology

This project will primarily focus on bio-based technology business incubation processes, with a vision of creating spinoff companies that can attract local and foreign investment to harness the available yet untapped business opportunities. This project provides an efficient bio-waste treatment system that meets set environmental compliance standards, and recovers energy and nutrients for industrial and agricultural applications, respectively. A waste-to-energy treatment solution has been developed for agro-processing industries with significant highly loaded wastewater volumes, from which

biogas, bio-fertilizers, and clean water are generated as by-products.

The treated water can be reused by the industry and neighbouring urban/rural farmers for irrigation or lawfully discharged into the environment with minimal environmental effects. The biogas can be used as energy at domestic and industrial levels, such as for fuelling gas cookers and boilers, and conversion into electricity through biogas generators. Further, when dried, the sludge can be sold as organic fertilizer.

### USES OF BIOGAS



Fuelling gas cookers



Conversion into electricity



Fuelling boilers,



The sludge can be sold as organic fertilizer.



Treated water can be reused by the industry and neighbouring urban/rural farmers for irrigation

## Local and regional benefits

The expected benefits include:



An integrated waste water treatment system that emits zero waste from agro-processing;



Contribution to adherence of environmental standards by firms, which adopt the technology.

### Project leader

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