

PREVENT Waste Alliance

Biomass Utilisation by Insects for Green Solutions (BUGS) in Africa

Factsheet - Ethiopia



Period:	12. 2023 – 10. 2026
Countries	Côte d'Ivoire, Ethiopia, and Uganda
Project partners	Africa Circular, Eclose, EAWAG and Trinomics. The project is co-funded by the Climate and Clean Air Coalition (CCAC) and PREVENT Waste Alliance.

The BUGS Project

Members of the PREVENT Waste Alliance—Africa Circular, Eclose, EAWAG and Trinomics have partnered to support national governments and communities in Côte d'Ivoire, Ethiopia, and Uganda. Their goal: reduce greenhouse gas (GHG) emissions, boost food security, and turn waste into value using Black Soldier Fly (BSF) waste processing technology. The project is co-funded by PREVENT and the Climate and Clean Air Coalition (CCAC). See the CCAC [TEAP Panel's Waste Brief](#), the [BUGS Factsheet](#) and [BSF infographic](#) for more.

The Black Soldier Fly – A Bug with Big Impact

The larvae of the Black Soldier Fly (*Hermetia illucens*) are fed organic waste, rapidly converting it into high-value products: protein- and fat-rich animal feed and nutrient-rich fertiliser. This small insect is gaining global attention as a circular, low-cost, and climate-smart solution for waste management and sustainable agriculture. Larvae can be harvested after around 14 days, achieving waste-to-biomass conversion rates of up to 20% (total solids). They can be processed into feed for livestock, poultry, fish, and pets. The leftover residue—called frass—can be composted and used as a fertiliser and soil conditioner. Ongoing initiatives, such as a [CCAC-supported site in Lima \(Peru\)](#), aim to demonstrate the business potential of BSF technology for large-scale organic waste treatment.

Country case: Ethiopia

Black Soldier Fly (BSF) technology offers a promising solution to some of Ethiopia's pressing challenges—ensuring food security, supporting economic growth, and protecting the environment.

Ethiopia has one of Africa's largest livestock populations but among the lowest yields per animal. Limited feed availability is a major constraint to the livestock sector. At the same time, rapid urban growth is driving a surge in organic waste from markets, kitchens, and farms—much of it unmanaged, leading to environmental and health risks, as well as GHG emissions. BSF technology presents a scalable approach to simultaneously address organic waste management and produce locally sourced animal feed and organic fertiliser.

A targeted scoping assessment was carried out to evaluate the potential for scaling BSF technology in Ethiopia.

Based on a review of existing literature and primary data from stakeholder interviews and workshops, the study gathered insights from representatives of academia, research institutions, government and policy bodies, entrepreneurs, and development partners. While not as extensive as a full feasibility study, this focused assessment aimed to identify key challenges and opportunities to guide further exploration and project planning in the Ethiopian context.

Strategic Locations: Addis Ababa and Butajira

Addis Ababa and Butajira were identified as promising sites for BSF implementation during a stakeholder workshop.

Both locations offer good access to organic waste and favourable conditions for BSF operations. Addis Ababa is especially well-suited for large-scale facilities due to its high waste volumes and urban proximity, while Butajira presents strong potential for small-scale or pilot projects.

However, successful implementation at either site will require investment in climate control infrastructure - particularly to support stable reproduction conditions for BSF.

Ethiopia, BSF, and Environmental Benefits

BSF farming offers a sustainable way to convert Ethiopia's growing volumes of organic waste into valuable products, aligning with national waste reduction goals and helping to curb methane emissions.

Scaling up BSF use can boost exports, create jobs, enhance food security, and generate income—while also delivering substantial environmental gains.

Compared to traditional landfilling, which emits about 930 kg of CO₂ equivalent (CO₂eq) per tonne of food waste, BSF treatment produces only 50 to 300 kg CO₂eq per tonne. If all organic waste in Addis Ababa and Butajira were processed using BSF, the estimated greenhouse gas reduction could reach 500,000 tonnes CO₂eq per year in Addis Ababa and 1,900 tonnes CO₂eq per year in Butajira.

Scaling up BSF in Ethiopia: What's needed?

To unlock the full potential of BSF technology in Ethiopia, the following strategic actions are recommended:

Regulatory & Policy Development

Integrate BSF into national waste management strategies. Establish clear standards for BSF breeding, rearing, and harvesting to create an enabling regulatory framework.

1. Capacity Building & Market Development

Launch training programs for government, private sector, and academic stakeholders—ideally hosted at a Centre of Excellence. Public awareness campaigns can address cultural concerns and build acceptance of insect-based technologies.

2. Waste Management & Infrastructure

Improve waste segregation to ensure consistent organic feedstock.

Pilot dedicated BSF rearing units, waste pre-processing facilities, and frass/chitin handling at test sites such as Bole Arabsa, where the Centre of Excellence is planned.

3. Research, Innovation & Financial Support

Invest in research to adapt BSF systems to local conditions—exploring region-specific waste streams, technologies, and markets. Trial innovations at sites like Bole Arabsa to inform scalable solutions.

4. Public-Private Partnerships

Strengthen collaboration across government, academia, and industry. Use the Circular Economy Centre of Excellence as a national hub for knowledge-sharing, technical support, and coordinated investment in BSF scale-up.

What's next?

The BUGS project will move forward with the following key activities:

- ➔ Develop a BSF Implementation Guide featuring policy tools and scalable business models.
- ➔ Conduct training workshops.
- ➔ Support government proposals aimed at enabling large-scale BSF adoption.
- ➔ Share lessons learned to promote replication across other countries in Sub-Saharan Africa.

PREVENT Waste Alliance

The PREVENT Waste Alliance serves as a platform for exchange and international cooperation. Organizations from the private sector, academia, civil society and public institutions jointly engage for a circular economy. The PREVENT members contribute to minimizing waste, eliminating pollutants and maximizing the reutilization of resources in the economy worldwide. They strive to reduce waste pollution in low- and middle-income countries and work together for the prevention, collection, and recycling of waste, as well as the increased uptake of secondary resources.

The PREVENT Waste Alliance was launched in 2019 by the German Federal Ministry for Economic Cooperation and Development.

On behalf of

German Federal Ministry for Economic Cooperation and Development (BMZ)
Water and circular economy
Bonn, Germany

This project is funded by the PREVENT Waste Alliance, an initiative of the German Federal Government.

More information: www.prevent-waste.net/en/

Imprint

Published by

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June 2025

