



BEST

Consortium

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Coordination

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[AGROECOSYSTEME \(AES\)](#)

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[MATHNUM](#)

[PHASE](#)

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Bioeconomy and small-scale systems for the collection, treatment and agronomic recovery of urban biowaste in Guadeloupe



Guadeloupe's island context, the climatic constraints of its tropical environment, the particular nature of urban areas due to their integration into rural areas, the importance of micro-farms, the major challenges facing food self-sufficiency, the originality of local biodiversity and the know-how around traditional Creole gardens, are all assets that make Guadeloupe a privileged site for research into the circular bioeconomy at different scales (neighbourhoods, towns, communes, the island as a whole).

Guadeloupe is a small island where the reduction and recycling of biowaste is becoming a key concern in the sustainable development of the territory as a whole. Around 800,000 tonnes of organic waste are produced each year, and much of this biomass, particularly that derived from urban biowaste, is neither sorted nor recycled, contrary to the AGECL law, which came into force on the 1st of January 2024. Despite the determination of local players to improve the situation, sorting biowaste at source remains very underdeveloped. Guadeloupe faces a number of serious constraints, including soil polluted by chlordecone, rapid urbanisation and the limited competitiveness of farms. With 80% of Guadeloupe's food and agricultural inputs currently imported, and 10% of arable land polluted by chlordecone, developing agro-ecological micro-farms and shared food gardens in urban and peri-urban areas represents one possible way to increase the island's long-term food self-sufficiency. The fact Guadeloupe is an island, its tropical climate, the particular nature of urban areas due to their integration in rural areas, the importance of micro-farms, the significant challenges to achieving food self-sufficiency and nutritional health, the originality of local plant, animal, cultivated, domestic and wild biodiversity and the know-how around traditional Creole gardens, are all assets that make Guadeloupe a privileged site for research into the circular bioeconomy at different scales (neighbourhoods, towns, communes, the island as a whole). However, the problem of closing cycles for food self-sufficiency and competing uses for land and bioresources is further exacerbated by the island context. On the one hand, agroecology should make it possible to feed the island better by diversifying farms and promoting their complementarity, while on the other hand, the bioeconomy could be a way of supplying farms with bio-inputs (compost, organic soil improvers, energy for on-farm micro-processing,



biostimulants, mulch, etc.) and Increase farmers' economic competitiveness by providing new outlets in the form of small-scale biorefineries.

Goals

The aim of BEST is to design models for the collection, treatment and recovery (CTR) of urban biowaste adapted to the social, economic, cultural and geographical context of the island of Guadeloupe. BEST is a consortium of partners who will co-conceive and implement an exploratory project to apply the concepts and methods they developed to real case studies in Guadeloupe. At the scale of urban neighbourhoods (e.g. the city of Pointe à Pitre) and periurban areas (e.g. municipalities in northern Basse-Terre), we will test the acceptability and feasibility of small-scale systems for the collection, treatment and recovery of urban biowaste and their possible connections to periurban micro-farming projects and community-based shared gardens.

BEST is complementary to and will reinforce Suzon Garnier's PhD project underway at the ASTRO research unit since November 2023. The aim of her thesis is to develop a modelling and multi-criteria evaluation tool for bioeconomic transition scenarios to optimise resource circularity, food self-sufficiency and farm competitiveness in Guadeloupe. The aim of the model is to shed light on the most strategic choices for the island's bioeconomic transition trajectories, using a systemic, interdisciplinary and multi-scale approach from the farm to the whole Island, while accounting for market constraints, stakeholder preferences, the opportunities for technological and agronomic innovation via small-scale biorefineries, and the development of urban and periurban agricultural micro-systems (e.g. micro-farms, shared gardens, aquaponics).

Partners

INRAE Division	INRAE research units	Expertise and contributions
AES	EU ASTRO	Recycling biowaste in agriculture and agronomic assessment
ECOSOCIO	UR ASTRO	Modelling; agroecological micro-farms; acceptability of bio-inputs; experimental economics, forecasting
	UR ETTIS	Socioeconomic models of the circular bioeconomy
	UMR MOÏSA	Management sciences and economics
GA	EU PTEA	Management of livestock effluent, local resources, links with socio-economic partners
MATHNUM	UR LISC	Complex systems
PHASE	UR ASSET	Small-scale livestock farming systems, links with socio-economic partners
TRANSFORM	UR OPAALE	Bioeconomic transformation models, biological recovery systems for organic waste and residues, environmental assessment; transition drivers; low-tech

Partners	Team	Expertise and contributions
CIRAD	UR Recycling and risk	Biowaste recycling and environmental assessment; local scenarios for circular biomass management
EKOsitwayen Gwadeloup Association		Promoting home composting and allotment gardens

