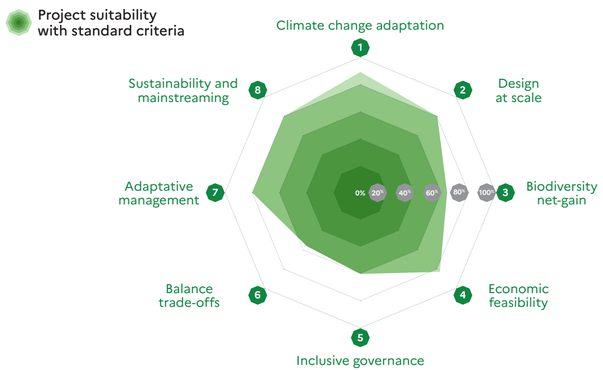
LEVERS FOR SUCCESS

- **Technical skills and interdisciplinarity:** diversity of knowledge and skills used (ecology, agronomy, pedology, climatology and economics). Cross-cutting of disciplines enables a systemic approach that takes into consideration the multiple benefits for the local area.
- **Partnerships:** diversity of stakeholders and points of view in the appreciation of the system.
- **Integration in the life of the local area:** visits to the experimental micro-farm brought together numerous stakeholders, including journalists of the agricultural press, technicians from the Tropical Technical Institute, the Guadeloupe Fab Lab and agricultural collectives. An event about the project was also organised, gathering together 70 local stakeholders and covered by video and audio reports in various national and local media (radio, TV, web).

RECOMMENDATIONS

- Enhance the technical and economic skills farmers through training to secure their setup and raising their awareness about high-risk types of farming (unpredictable climate events).
- Develop micro-mechanisation and decision-making assistance tools to make the work more effective.

ASSESMENT ACCORDING TO THE IUCN GLOBAL STANDARD FOR NATURE BASED SOLUTIONS



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PROJECT LEADER

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RÉPUBLIQUE FRANÇAISE
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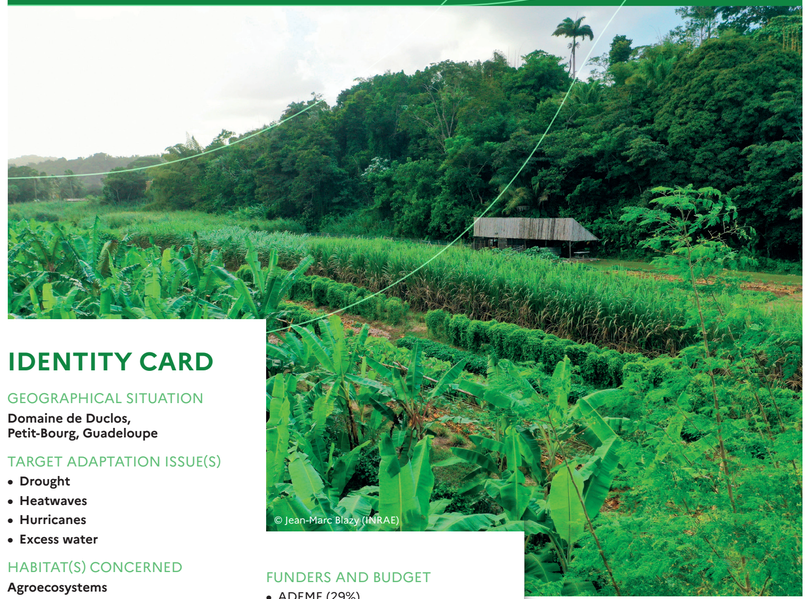
EXPLORER PROJECT
2019 - 2022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IDENTITY CARD

GEOGRAPHICAL SITUATION
Domaine de Duclos, Petit-Bourg, Guadeloupe

TARGET ADAPTATION ISSUE(S)
- **Drought**
- **Heatwaves**
- **Hurricanes**
- **Excess water**

HABITAT(S) CONCERNED
Agroecosystems

TYPE(S) OF NBAS
Restoration of ecosystems

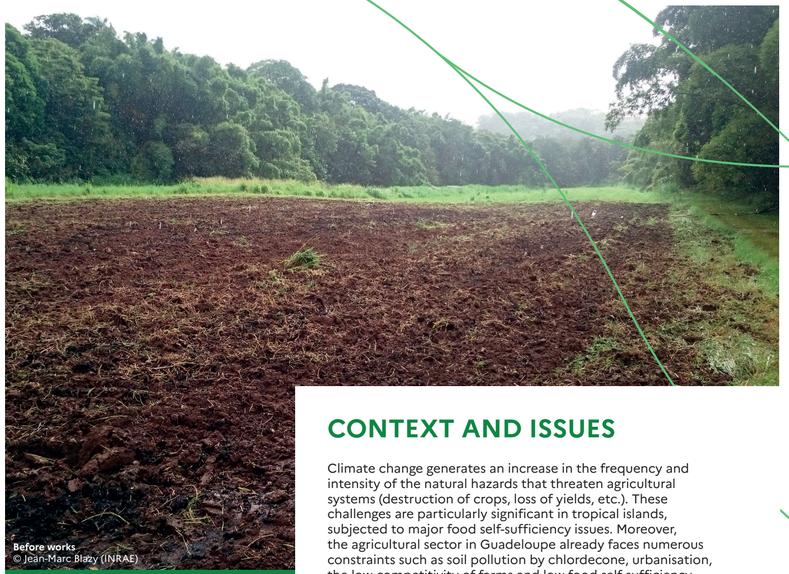
PROJECT LEADER(S) AND ASSOCIATED PARTNER(S)
- **INRAE** – Tropical Agrosystems (ASTRO) RU
- Météo-France
- OREC Guadeloupe

FUNDERS AND BUDGET
- ADEME (29%)
- Guadeloupe ERDF (Guadeloupe Regional Council) (21%)
- Self-funding (50%)

Total budget: **782 402 €**

REGULATORY CONTEXT OF THE PROJECT
- Regional Biomass Plan(SRB)
- Territorial Food Projects (PAT)

INRAE



Before works
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PROJECT OBJECTIVES

- **For adapting to climate aux changes**
  Increase the resilience of tropical agricultural systems with regard to unpredictable climate events (mainly drought and cyclones).
- **For biodiversity**
  Promote a type of agriculture favourable to biodiversity and restore a patchwork of diverse landscapes and ecological continuities.

CONTEXT AND ISSUES

Climate change generates an increase in the frequency and intensity of the natural hazards that threaten agricultural systems (destruction of crops, loss of yields, etc.). These challenges are particularly significant in tropical islands, subjected to major food self-sufficiency issues. Moreover, the agricultural sector in Guadeloupe already faces numerous constraints such as soil pollution by chlordecone, urbanisation, the low competitivity of farms and low food self-sufficiency.

Launched in 2019 on the INRAE's experimental Petit-Bourg estate, the Explorer Project implements a climate-smart agriculture model to respond to the triple issue of food self-sufficiency, mitigating climate change and adapting tropical agrosystems.

Climate change scenarios developed for the studied areas provided a precise idea of the evolution of the vulnerability of agriculture to climate change, resulting in the setting up of a pilot agroecological micro-farm for natural-scale testing of the considered solutions. This farm, together with these experiments, will serve as an interface for discussion and dissemination with stakeholders (industrialists, farmers, agricultural technicians, etc.) concerning the biotechnical and socioeconomic levers for agroecological transition in Guadeloupe.

This micro-farm model is intended in the longer term to stimulate the creation of jobs in the sectors of agroecology, bioeconomy and innovative short supply chains, and to improve the competitivity of farms and farmers' quality of life. The objective is to achieve a high income level to facilitate the arrival of ne farmers and to the island's food self-sufficiency, while complying with the principles of sustainable development.

ACTIONS IMPLEMENTED

Organised in 7 crop plots on which more than fifty local species are cultivated (banana, sugar cane, tubercules, market gardening, livestock, etc.), this small farm with a surface area of 1 ha combines the traditional know-how of creole gardens (an agroecosystem characterised by the combination of a broad diversity of complementary crops) with new technologies (micro-weather station to establish correlations between production and the climate). Bio-inputs (compost, mulching, bio-fertilisers, etc.) are used to fertilise the soil. Biological pest control techniques are also applied on the micro-farm. Finally, the soil is tilled as little as possible and permanently covered in order to conserve available resources (water and soil). The crops produced are labelled "Organic Farming". All these practices optimise the resilience of the agroecosystem by being based on a diverse and appropriate ecosystem.

So as to encourage biodiversity as much as possible, diverse multi-layer hedges are set up, there flower strips in the centre of the crop plots, together with an area exclusively dedicated to biodiversity including a pond.

SCHEDULE

	PROJECT LIFESPAN
November 2016	Start of micro-farm prototyping.
February 2018	Start of setup works.
January 2019	End of setup works.
June 2020	Consolidated results obtained.
February 2021	Presentation of results to political decision-makers and modelling of scenarios for the territorial-scale transition.

GOVERNANCE ADOPTED

Six board meetings between the project partners were organised to plan joint actions, share the first results and difficulties, and consider how to promote the project. A group of farmers and advisors was also made up to assess the tested agricultural practices and systems. Finally, a workgroup bringing together the stakeholders concerned (farmers, industrialists, local authorities, State services) meets once a year to collectively define agroecological transition scenarios supporting the development of a territorial bioeconomy (better resistance and pest control).

After works
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BENEFITS AND CONTRIBUTIONS OF THE PROJECT THEPROJECTROJET

BENEFITS REGARDING TARGET ADAPTATION ISSUES

- The introduction of local, complementary and service-providing plants (legumes, repellents, attractors, multi-functional hedges, strips of flowers) combined with an increase in the organic carbon in the soil (improver water-retention capacity) strengthened resilience of tropical agrosystems to present and future climate hazards.

BENEFITS FOR BIODIVERSITY

- The diversification of crops favours biodiversity: the number of plant species and the species-richness of birds and soil fauna are increasing.

OTHER BENEFITS PRODUCED

- Food self-sufficiency: varied, local and healthy food production (no chemical fertiliser), while maintaining a high level of productivity for the surface area (gross profit margin approximately 22 450 €/ha/yr and twice as many people fed per hectare per year compared to the regional average (the north of the island of Basse-Terre over a surface area of 360 km²) of conventional agriculture production systems in 2021).
- Mitigation of climate change: sequestration of 0.7Teq CO_2/ha/yr.

MONITORING INDICATORS

Adapting to climate change

- Indicators developed, for each climate hazard predicted in the scenarios, to cross-match the exposure of the entity assessed (plot, farm, area) with its sensitivity to the hazard under consideration.

Biodiversity

- Flora, avifauna, pollinisers and soil fauna: surveyed *in situ*.