## Objectives of the project

The overall objective is to enhance the sustainability of cocoa farms while preserving the environment by tailoring cocoa cropping systems to the changing context in Côte d'Ivoire and Ghana. The aim is to contribute to the agro-ecological and organizational transition of cocoa production in these countries by proposing research that will help trigger a shift towards production systems that are in tune with environmental sustainability, economic sustainability, social responsibility, and quality standards, including ethical imperatives.

## Background

In 2017, Côte d'Ivoire achieved a record cocoa production level of 2 million tons (42% of world cocoa production). Cocoa provides a livelihood for about a million smallholder farmers in this country and in Ghana, the world's second largest producer. However, this production is taking place against a backdrop of growing pressure on land and forest resources. The historically dominant cocoa production model—based on the expansion of orchards often after total forest clearing and using very cheap labour (often migrant workers)—is coming to an end. The current situation may lead to a decline in cocoa production which could be explained by various factors. Indeed, alongside their commitments to protect the last remaining forests from clearing, these two countries are grappling with the problem of ageing cocoa stands and the loss of soil fertility. The goal of rehabilitating former cocoa stands is also hampered by the presence of Cocoa Swollen-Shoot Virus (CSSV) and the global Climate Change (CC) trend which lead to large inter-annual fluctuations in cocoa yields and thus in cocoa farmers' incomes. Climate change is worsening the impact of CSSV and leading to a reduction in areas suitable for cocoa production.

*A nice harvest of pods from an agroforestry cocoa farm in Toumboukro (Côte d'Ivoire)*

Meanwhile, Ivorian and Ghanaian cocoa is almost exclusively traded on commodity markets which limits the added value that cocoa farmers could bring to their product. Such a situation does not encourage them to go beyond the chocolate industry's cocoa bean quality requirements and to invest in more sustainable farming systems. Under pressure from civil society and consumers, however, these requirements are becoming more stringent in terms of ethical and environmental quality of cacao. This context leads to the increasing adoption of sustainability and traceability labels and programmes that pledge environmental protection, a ban on child labour and better remuneration for cocoa farmers. However, these social and environmental responsibility tools for chocolate producers have many shortcomings, as observed in the field. These structural weaknesses are compounded by the world cocoa price volatility, even though safeguards exist, such as the minimum farm-gate price set by the Coffee and Cocoa Council (CCC) in Côte d'Ivoire.

## The theory of change to achieve the objectives

The aim of the Cocoa4Future project is to identify, assess and promote Cocoa AgroForestry Systems (CAFS) that are efficient, resilient and adapted to the changing global cocoa sector context (specific objective 1) and to identify, test and promote levers for the socioeconomic sustainability of cocoa

farms (specific objective 2). The project targets cocoa farming systems (plot scale) and production systems (farm scale), while also intervening at the territorial and supply chain levels. It produces knowledge based on surveys and modelling on CSSV, agroecological farming systems including farmers' practices, and quality management along the value chain. To integrate farmers' knowledge and scientific knowledge, farming systems design (or re-design) includes participatory processes. Cocoa farmers' groups are formed to determine ideal systems that would enable them to meet the pre-established specifications. These workshops underspin the redesign/co- design of prototypes whose performances will *a priori* be better than those of the current cocoa production systems. Some workshops are devoted to designing possible and preferred transitions for implementation of the selected prototypes. To scale the project results by adapting proposals to the context of each area of intervention, a strong attention will be put on advisory services provided by public services, cooperatives and private firms. The project is developing also new methods and tools for advisors to address the agro-ecological transition and strengthen their capacities.

The project is therefore conducted with the key stakeholders (cocoa growers, private sector, NGOs, etc.) to promote changes in practices and the acquisition of knowledge and skills, thereby contributing to longer term impacts. Five major results are essential to be able to initiate and oversee the agro-ecological and organizational of cocoa production in Côte d'Ivoire and Ghana (Figure 1).

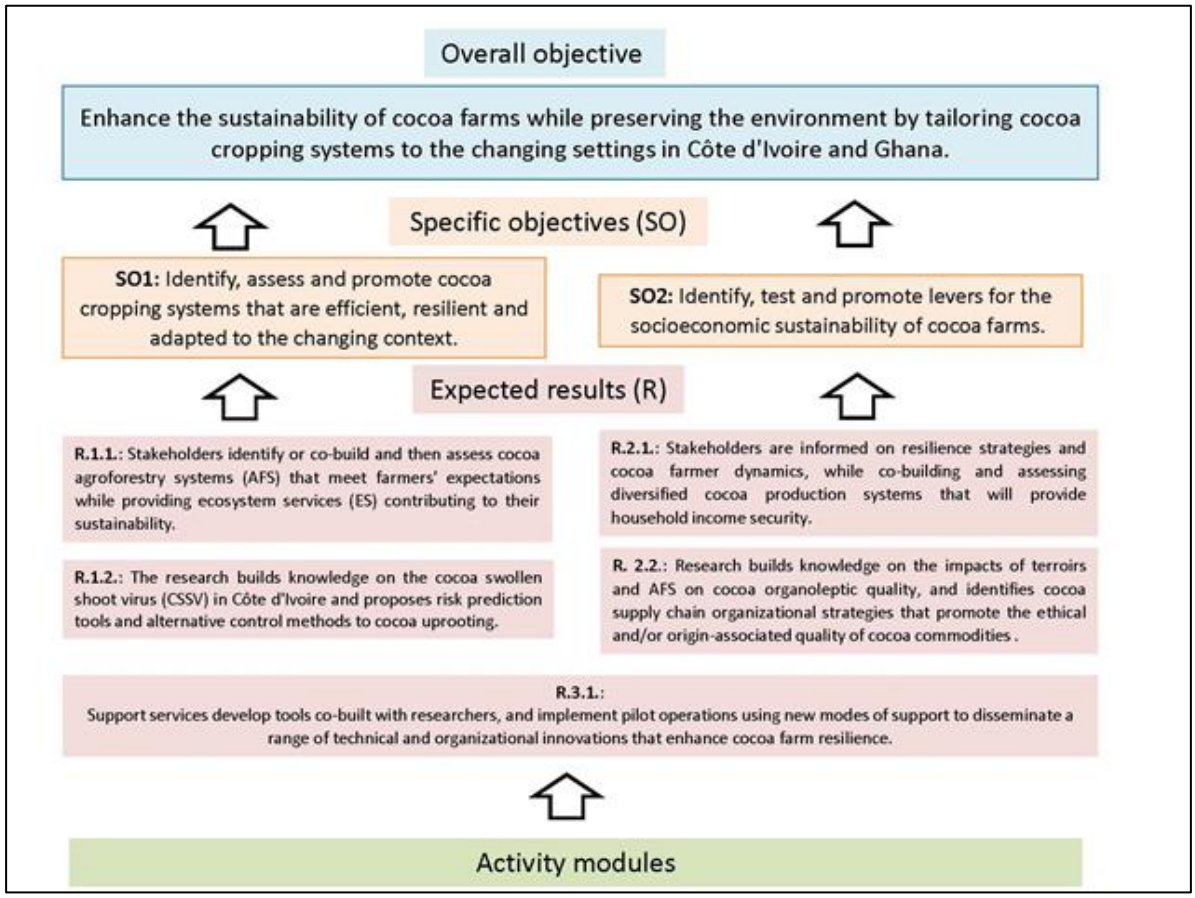


*Figure 1: Impact pathway of the Cacao4Future project*

## Main activities

The Cocoa4Future activities are largely carried out in Côte d'Ivoire, with some also conducted in Ghana.

**Firstly**, a multi criteria assessment of current cocoa farming systems is conducted to identify the most efficient ones, especially in terms of CC, resilience and economic performances. It is combined with the co-design (or re-design) of cocoa farming systems involving tree species associations whose benefits are in line with cocoa farmers' expectations and that could be disseminated by public or private advisory support services.

**Secondly**, an activity module focuses on the CSSV. It is indeed essential to measure the impact of plant diversity on mealybug vectors and determine the mechanisms involved to be able to elaborate integrated pest management guidelines, while also contributing to the co-design of CAFS that meet cocoa farmers' expectations in terms of pest and disease control.

**Thirdly**, an *in-situ* monitoring system is set up to identify cocoa farmers' technical and social innovations, practices, constraints and decisions. The collection of this data helps gain further insight into current dynamics and identify existing practices, to draw inspiration from them, and even to disseminate the most efficient practices on a broader scale. The Cocoa4Future Project also identifies or co-builds more efficient cocoa production systems *via* diversification (rice growing/fish farming, recovery and efficient use of derivative CAFS products, organic cocoa production, etc.).

**Fourthly**, the characteristics of some terroirs in Côte d'Ivoire could yield cocoa with features sought by chocolate makers, thus enhancing its development. The same applies if the positive effect of agroforestry practices on cocoa quality can be demonstrated. Meanwhile, identifying and analysing organizational innovations that enhance the organoleptic and ethical features of Ivorian and Ghanaian cocoa quality helps gain insight into the key factors of quality management, power relations within the sector, as well as how the socio-institutional contexts influence the different forms of quality management, particularly by farmers' organizations. The collection and analysis of this data thus helps to identify socioeconomic sustainability levers that could be used to boost cocoa farmers' incomes.

**Finally**, the support to advisory services (public or private) is expected to facilitate the dissemination of knowledge and practices identified by research activities to boost innovation. The research is therefore investigating whether the advisory services have the methods necessary to support cocoa farmers, or if they need to adjust their intervention procedures or better coordinate their activities in order to improve and strengthen capacities of these farmers.

## Results to date (August 2023)

- ✓ Implementation of 5 monitoring and evaluation networks to meet the project's various objectives. For example, 150 farmers' cocoa farms that are representative of the complexity gradient that prevails in Côte d'Ivoire have been monitored since 2021 in order to assess the various services provided by cocoa-growing systems. In the same time, 300 cocoa farms (150 in Côte d'Ivoire and 150 in Ghana) are followed to identify the dynamics underway in rural areas and 90 others located in 3 zones in Côte d'Ivoire (30 per zone) are being monitored to study the interactions between fish and cocoa farming.

- ✓ In terms of training and skills enhancement, 21 PhD theses are carried out as part of the Cocoa4Future project. Numerous internships have also been completed or are underway. Three training courses (support for scientific writing, support for data analysis and data management) were organised in 2023.

- ✓ At institutional level, links have been strengthened with the Ministry of Agriculture and Rural Development and above all the CCC. With the CCC, regular technical meetings are being planned to discuss the issues addressed in the project and the results obtained, which will help to promote convergence/synergies with the CCC's activities in support of cocoa farmers in terms of

agroforestry, and encourage it to take on board some of the project's achievements. A partnership with the Agence NAtionale de DEveloppement Rural (ANADER) is being set up to involve it in validating and capitalising on the technical references produced by the project.

- ✓ From a technical point of view, a number of results are available, in particular the identification of the most suitable commercial species for wood production and their introduction into cocoa farming systems, as well as highlighting the importance of helping cocoa farmers to manage the trees they allow to grow spontaneously in their cocoa farms, as the current wood resource is a legacy of the forest ecosystems that existed before the cocoa farm was established, whereas in the future it will be provided by these spontaneous trees that have grown in the cocoa farm.

- ✓ The project now has a website and a LinkedIn profile, enabling it to disseminate its news and highlights on a large scale. The first results of the project were presented at the 31st International Symposium on Horticulture (IHC 2022; 14-20 August 2022, Angers), and the 2nd International Symposium on Cocoa Research (ISCR 2022; 3-5 December 2022, Montpellier). Four articles have been published**.**

**Organization**

Cocoa4Future is organised around five modules to achieve the expected results. The coordination team is established at ESA/INP-HB (Yamoussoukro-Côte d'Ivoire) and works under the direction of a coordinator posted in Côte d'Ivoire. The project coordinator is assisted by a pair of coordinators for each module. The project also includes the establishment of a Steering Committee and a Scientific Committee. Two Steering Committees have been set up for 2021 and 2022. A Scientific Committee made up of a panel of experts in the topics covered by the project met in May 2023.

**Implementing organization**

Centre de coopération Internationale en Recherche Agronomique pour le Développement (CIRAD).

**Partners of the project**

- ✓ Training institutions: Université Félix Houphouët-Boigny (UFHB), Ecole Supérieure d'Agronomie de l'Institut National Polytechnique Félix Houphouët-Boigny (ESA/INP-HB), Université Nangui Abrogoua (UNA), Université Jean Lorougnon Guédé (UJLoG) and University of Legon ;
- ✓ Scientific national and international institutions: Cocoa Research Institute of Ghana (CRIG), Centre de coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), EU Joint Research Center (JRC). All these institutions are renowned for their experience and recognized scientific expertise in agroforestry and cocoa production, as well as their training expertise;
- ✓ NGOs (Nitidæ: Filières et Territoires and APDRA Pisciculture Paysanne) which support several cocoa farmers' cooperatives in Côte d'Ivoire and help identify technical solutions that could enhance the agronomic, ecological and social sustainability of cocoa farming systems.

**Other stakeholders**

Private companies which support several cocoa farmers' cooperatives in Côte d'Ivoire and Ghana and help identify technical solutions that could enhance the agronomic, ecological and social sustainability of cocoa farming systems.

**Location**
Côte d'Ivoire and Ghana

**Funding and co-funding**

| | |
|---|---|
| EU | € 6,000,000 |
| Agence Française de Développement | € 1,000,000 |
| Total budget | € 7,000,000 |

**Duration**
Five years; February 2020 - January 2025

**Website**
https://www.cocoa4future.org/

**Updated on 17/10/2023**