Project objective

Strengthening of networks and institutional capacities in Plant breeding for the development of resilient crops - meeting the needs of farmers in West Africa.

The overall objective is to contribute to the sustainable increase in agricultural productivity and the resilience of smallholder farmers in the face of population growth, economic vulnerability and climate change. More specifically, the project aims to implement a better coordinated approach to varietal selection, both at regional and national level, by placing breeders of five target crops (millet, sorghum, fonio, peanuts and cowpeas) from three countries (**Burkina Faso, Niger and Senegal**) at the heart of the action to improve and modernize their selection practices and better respond to market demand.

Background

The West African agricultural sector represents around 35% of the region's gross domestic product (GDP) and employs 60% of the active population. However, several factors are hampering growth in agricultural productivity, including the fact that quality, reliable and affordable seeds and fertilizers are difficult to access and that the link between research, farmers and markets is still weak. In addition, there is still little information on new agricultural technologies and best farming practices. The region has some of the lowest yields per hectare in the world. In addition, West Africa is already experiencing rising temperatures, rainfall that varies from year to year and increasingly frequent and devastating extreme weather events. The resilience of small producers in the Sahel can be increased through access to better varieties that meet local demand, combined with access to inputs and efficient distribution channels. Indeed, the modernization of varietal selection practices is essential to allow national programs to respond more relevantly to a varietal demand targeted on market needs and to gain efficiency in the development of resilient, productive and good quality varieties, which are nutritional and adapted to their local environment.

Theory of change to achieve the goals

The **first main result (PO1)** of the project is*: small producers access, adopt and use new, more efficient varieties, which meet local needs and market demand*. This will not only improve the production and quality of agricultural products but also increase the income of small farmers. This will be achieved through project activities that aim to link breeding programs to other actors in the value chains, including farmers, processors, small and medium enterprises in the seed system and the food industries.

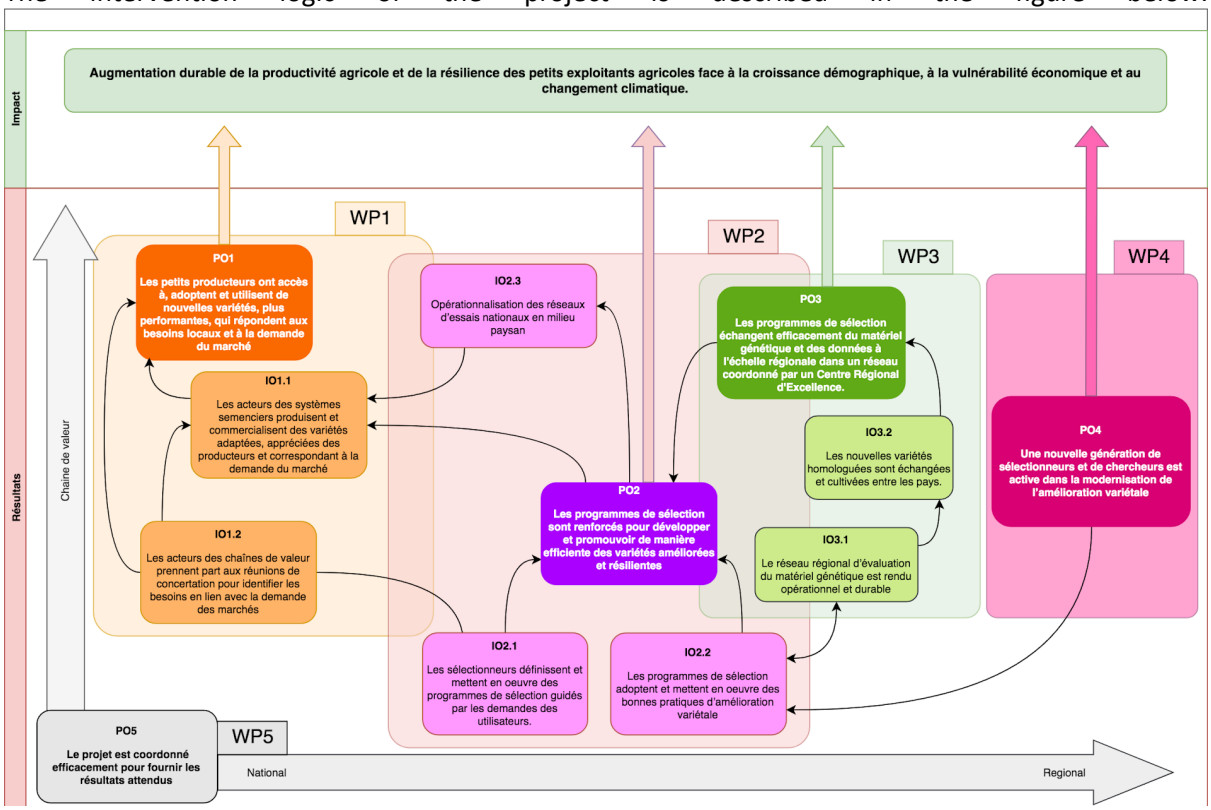
The **second main result (PO2)** is: breeding programs in the three partner countries are strengthened to develop and promote improved and resilient varieties in an efficient manner. This result is directly linked to the first main result as it will make it possible to supply the appropriate varieties to seed systems and value chains. It will also help to sustainably strengthen the impact of breeding programs in the three countries. To achieve this result, project activities will first focus on implementing demand-driven selection, defining selection priorities, and identifying the constraints and capacities of the selection programs to respond to them.

The **third main result (PO3)** is: breeding programs efficiently exchange genetic material and data at regional level in a network coordinated by a Regional Center of Excellence. This process has already been initiated as part of CORAF's long-term strategy in the region and implemented by the National Centers of Specialization and the Regional Centers of Excellence. The anticipated impact of this result will be that the efficient exchange and evaluation of genetic material on a regional scale, as well as

the sharing of data in a dynamic selection network coordinated by the Regional Center of Excellence. The Regional Center for the Improvement of Adaptation to Drought in the Sahel (CERAAS), with the support of CIRAD and the Africa Rice / Integrated Breeding Platform, will strengthen national breeding programs and serve as a virtuous loop for the second main result.

Finally, **the fourth main result (PO4)** is: *a new generation of breeders and researchers, active in the modernization of varietal improvement*. This will have a major impact on the capacity of selection programs to implement best practices thanks to the involvement of newly trained scientists.

The intervention logic of the project is described in the figure below.



Principal activities

The main activities that will be carried out during the project are:

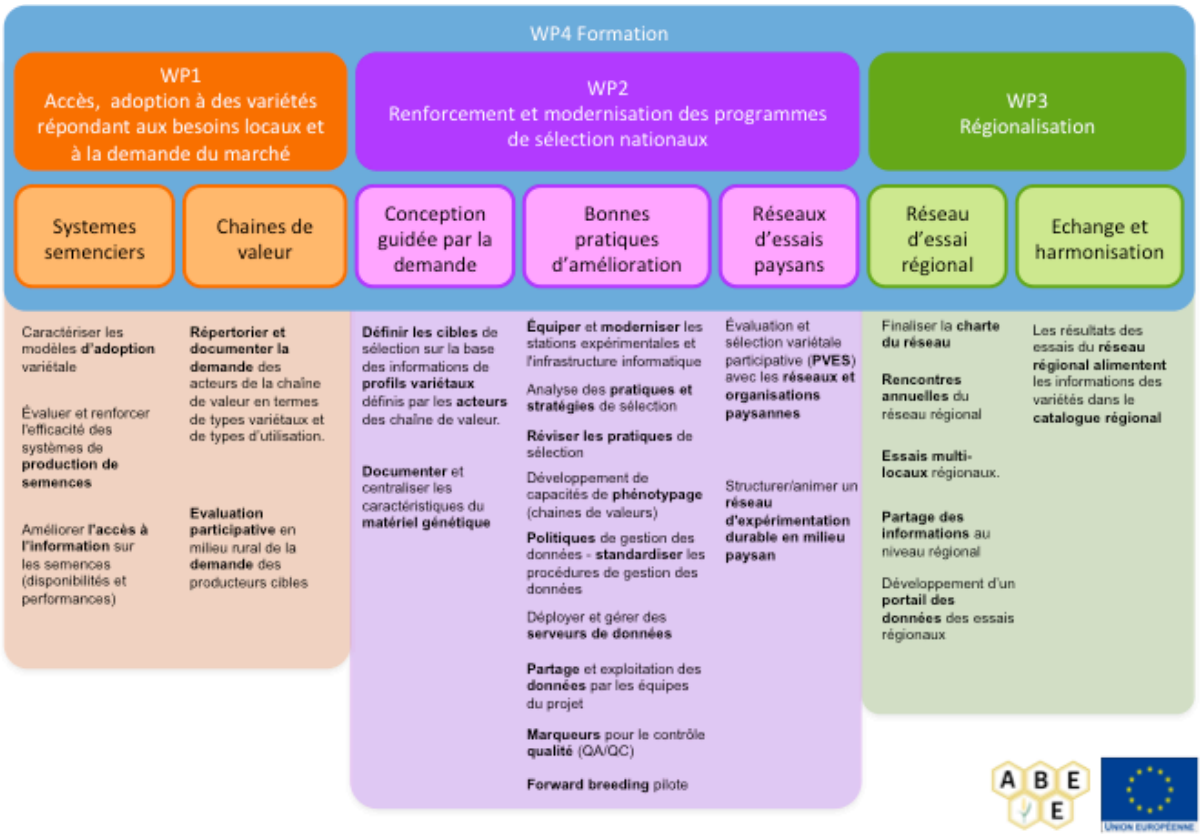
- ✓ Surveys, which will be carried out in rural areas with various actors in the value chains (SMEs and SMIs in food processing, oil industries, etc.) to understand the constraints, analyze demand and translate it into a profile of varieties. Surveys will also be conducted to characterize the models of variety adoption by producers.
- ✓ Workshops will be organized at national level to define the profiles of improved products and translate them into selection targets. National consultation meetings with stakeholders in the seed system will be held annually to better plan seed needs.
- ✓ At the regional level, meetings of the regional network for the sharing and evaluation of varieties will be organized to identify the most relevant varietal pools and agro-ecological zones, harmonize the methods of collecting agronomic data and assemble and analyze the data produced. In addition, workshops for planning activities and presenting the results will be organized with the implementation teams.
- ✓ Training on selection based on demand intended for breeders; on the use of BMS as a tool for digitizing selection and data management programs, for breeders, technicians and data managers. There will also be training on the use of molecular markers for the implementation of modern

selection schemes that take into account complex characteristics such as those linked to nutritional quality. Finally, several master and thesis students will be trained.

- ✓ The modernization of selection programs which will be implemented by the adoption of institutional data management policies, the deployment of a digital management tool for selection programs, the review of improvement strategies and practices, use of molecular markers for quality control to increase selection efficiency.
- ✓ Finally, varietal evaluations which will be carried out on the one hand at the national level, through participatory varietal evaluation and selection trials which are set up in rural areas, to demonstrate the potential of the varieties already approved and to screen with producers the most promising selection lines. On the other hand, at regional level, multi-local trials will be conducted to test the adaptation on a larger scale of varieties offered by breeders from different partner countries. The results of these regional tests will be used to feed the database (regional body of the BMS) and the regional varietal catalog to offer breeders a wider range of lines that can be used by breeders to create new varieties. Finally, seed production plots will be set up in the countries for the various crops.

Organization

The project is organized into 5 work packages aligned with the five main project results:



ABEE's governance is made up of a project steering committee (PSC) consisting of institutional representatives from all the partners of the project consortium, including the EU delegation in Dakar, and will associate the representatives of the IER, ICRISAT and the EU delegation in Bamako, and other initiatives underway in the region, to ensure optimal cohesion at regional level. A project management team (PMT) composed of 12 people: 5 work package coordinators, 5 thematic coordinators and 2 institutional focal points. Finally, a technical committee (TC) composed of the members of the GP team, as well as three external experts will be responsible for assessing the issues, providing technical assistance, reviewing project reports and advising the PSC.

Implementing organization
CORAF

Partners
CIRAD, AfricaRice / IBP, INERA, INRAN, ISRA / CERAAS

Other stakeholders
The following producer organizations: YIYE Plateforme, Minim Song Panga and Sougr Nooma (Burkina Faso); Mooriben and Fuma Gaskiya (Niger) and ASPRODEB and RESOPP (Senegal).

Region
Burkina Faso, Niger and Senegal.

Funding and co-funding

UE (95%)	€ 8,000,000
CIRAD	€ 485,290
CORAF	€ 286,640
Total budget	€ 8,771,930

Duration
5 years (2019-2024)