

**The new phase of DeSIRA : Agriculture research and innovation to support agroecological transition of food systems in Sub-Saharan Africa**

**Component 1: innovations at scale for agroecology (DeSIRA+)**

**Component 2: Regional Multi-actor Research Network in Agroecology (RMRN- agroecology)**

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1. **Agroecological food systems transition**

The transition towards agroecological agri-food systems is an effective pathway supported by a large range of actors (researchers, policy makers, civil society, farmers, etc.) to develop productive and resilient farming systems and value chains able to address current mounting challenges (food security, climate change, biodiversity loss, land degradation, water scarcity) with a holistic perspective. It requires new knowledge, capacities and policies to address complex problems and co-create solutions based on agroecological principles with the integration of scientific and local knowledge.

FAO gives a broad definition of agroecology which encompasses its technical and social dimensions: "agroecology is an integrated approach, which simultaneously applies ecological and social concepts and principles to the design and management of food and agricultural systems. Agroecology aims to optimize the interactions between plants, animals, humans and the environment while taking into account the social aspects that must be addressed for a sustainable and equitable food system "[[1]](#footnote-1).

Several studies that refer to agroecology prefer to insist on principles to define what agroecology is. The FAO proposed 10 elements to characterize agroecology, identified from a consultation process carried out between 2015 and 2017 and approved by the FAO member states. The CSF HLPE report on agroecology[[2]](#footnote-2) drew on this work and presented 13 principles to be applied for an agroecological transition. The 10 elements and 13 principles are aligned.

Agroecology is not providing a silver bullet response. It is a context specific approach[[3]](#footnote-3). To address the specific challenges in Africa and other regions worldwide, agroecology is to be open to technological innovations and to markets. In Africa, agroecology is supported by a range of actors including civil society (FO, NGO), private sector involved in specific value chains and governments with dedicated policies or strategies. Several African countries already designed specific programmes or strategies to promote agroecological approaches. At continental level the African Union developed the Ecological Organic Agriculture Initiative. ECOWAS is implementing a Programme on Agroecology with the support of several donors. Agroecology can provide relevant contributions to larger strategies such as the Green Recovery Action Plan, endorsed by the African Union, or the Soil Initiative for Africa, supported by the AU and FARA. Agroecology is also coherent with the CAADP/Malabo commitments.

1. **How to support agroecological innovations?**

The co-creation of innovations for agroecology and its scaling requires the production of knowledge for action, the development of new technologies and practices, the strengthening of relevant capacities to innovate for a large range of actors and relevant organisational arrangements based on the mobilisation and engagement of different stakeholders. Interactions between researchers, private sector actors, farmers’ organisations and civil society are crucial to produce innovations. However, the type of interventions to co-innovate varies depending on the phase of innovation. Four phases or stages may be emphasized: 1) the ideation phase (generation and evaluation of ideas), 2) the prototyping, piloting or testing phase to make necessary improvements, 3) development phase to test and adapt in real conditions the innovation (which includes bringing the innovation to the market), 4) the generalization phase bringing the innovation at scale including ongoing, adaptation, as well as the ‘embedding’ of the innovation.

An enabling environment is required for scaling agroecological innovations. It includes policies for agroecology including re-purposing subsidies, better access to finance and markets, and improved services for agroecology (advisory services, adapted mechanisation, bio-inputs, etc.)

Research should play a key role for producing scientific knowledge on agroecological processes and innovations, by strengthening capacities and providing evidence for science-based policies.

1. **Objective**

The **Overall Objective** is to support agroecological, ecosystem, and nature-based transitions towards productive, sustainable and resilient food systems through increased investments in research and innovation in Sub-Saharan Africa

**The specific objectives:**

1. Increased co-creation and adoption of agroecological innovations (products, technologies, models and/or services) by small-scale farmers and SMEs of the agri-food sector.
2. Increased capacity of farmers’ organisations, civil society and private sector actors (SMEs) to scale innovation for agroecology by addressing the key barriers and by mobilizing the appropriate levers.
3. Increased capacity of research organisations and universities to contribute to scientific knowledge generation and innovation for agroecology through transformative quality research and education on agroecology.
4. Improved enabling policy making environment for agroecology at national, regional and continental levels.
5. **The components**

The new phase of DeSIRA has two complementary components: DeSIRA+ and RMRN-agroecology.

**Component 1: Innovations at scale for agroecology in Sub-Saharan Africa (DeSIRA+)**

The key elements of this component are:

* Interventions with EU MS (France, Germany, Belgium, Italy, etc.) and international organization (IFAD) to increase capacities (co-funding, partners, policy dialogue). Each organization implement one or several programs in several African regions (East, West, Central, Southern, Indian Ocean)
* Each program will support several consortia of actors led by non-research actors (private sector, farmers’, CSO) with support of research when relevant; the consortia are identified through calls for proposals to co-design and scale agroecological innovations.
* Each program includes transversal support to the selected consortia (training, coaching, exchange of experience) or to national or regional organisations (e.g. advisory services). It also includes knowledge management activities.
* Each program develops strong relationships with policies (REC, countries) to foster policies for agroecology.

DeSIRA LIFT + and FAO (project lead by the Office of Innovation, TAPE+) will provide transversal support to the programs (monitoring and evaluation for learning, exchange of experiences, knowledge sharing, strengthening of African capacities to support innovation, development of high-education curricula and vocational training)

**Budget** (EU Africa regional programme) : €100 euros + EU Member States contribution. First year of implementation of programs: 2024, 2025, or 2026

**Component 2: Regional Multi-actor Research Network in Agroecology in Sub-Saharan Africa (RMRN-agroecology)**

The RMRN is a group of R&I organisations providing leadership in scientific processes and knowledge creation focusing on agroecological and sustainable agri-food systems. RMRN are led by African research organisations and universities. RMRN include concrete partnerships with (i) international organisations and/or European research organisations/universities and (ii) non-research organisations (NGO, private sector, Farmer Organisations, public entities). The group demonstrate scientific expertise with a regional coverage and mandate (East Africa, West Africa, Southern Africa).

The RMRN address specific topics related to agroecology, strengthen research networks on agroecology, carry-out some research activities, foster high-education curricula, and inform policies.

There is one RMRN per region (West, East, Southern) involving organisations from different African countries from the specific region.

The RMRN are identified based on a call for Expressions of Interest launched and managed by Sub Regional Organisations (SRO) which are fora of National Agricultural Research Systems[[4]](#footnote-4). SROs are not part of the RMRN. However, they provide guidance and support to the RMRN members, facilitate communication, supervise the management of resources, and link the RMRN with Regional economic Communities policies and priorities. There is a memorandum of understanding between the SRO and the members of the RMRN. There is a contract between one EU delegation and the SRO including the selected RMRN.

The RMRN and the relevant SROs are supported by FARA and RUFORUM (exchange of knowledge and experiences between regions, monitoring). The European Commission Joint Research Centre (JRC) provides technical support to FARA and RUFORUM.

**Budget** (EU Africa regional programme) **:** about 4.5M€ per region including RMRN and support to SRO

1. **Over all governance**

Several mechanisms are put in place to monitor this new phase of DeSIRA

* Advisory committee composed of partners meeting twice a year and providing feed-backs
* DeSIRA platform with EU member states and IFAD to share information and provide recommendations.
* Global Monitoring and evaluation Framework to monitor progresses (see : [DeSIRA Global Monitoring and Evaluation Framework | Capacity4dev (europa.eu)](https://capacity4dev.europa.eu/info/desira-global-monitoring-and-evaluation-framework_en)

**ANNEX 1 :** Proposition of topics related to agroecology for the two components (not comprehensive)

* **Agrobiodiversity to support agroecological processes**
	+ Agrobiodiversity (crops, animals, mycorrhiza/bacteria) is key to support ecological processes towards healthy soils, diversified cropping and farming systems for better production and resilience, diversified landscapes to provide eco-systemic services. By addressing technical, economic, social and policy dimensions, specific emphasis could be put on (i) neglected and under-utilized crops including evolutionary breeding and seed systems management, (ii) the diversity of animal landraces to enhance the resilience of the livestock system and to strengthen mixed-farming systems, (iii) agroforestry (selection and association of trees, interactions with crops) with specific challenges depending on the agroecological area (humid, dry, irrigated).
* **Soil health to improve production and eco-systemic services**
	+ Soils are the basis of food and non-food production and generate eco-system services (water cycle, carbon storage, etc.). There is a need to address knowledge gaps regarding ecological processes and the development of solutions based on ecological processes (including bio- and organic fertilisers). For economic and environmental purposes, practitioners and farmers require support (tools, models, advisory services) with an holistic perspective to manage soil health including the cycle of the main nutrients (N,P, K) with different sources (on and off-farm organic fertiliser, inorganic fertiliser, legumes, agroforestry, etc.). The effective and inclusive management and governance of agricultural and pasture land are key to ensure that soil is able to provide eco-system services.
* **Integrated pest management based on agroecological processes**
	+ Pest and diseases are challenging production in Africa. Developing new solutions based on ecological processes is a priority to avoid an overwhelming dependence on chemical pesticides. Specific emphasis should be put on the development of effective and reliable solutions making use of natural enemies monitored and stimulated within and around the plots or produced and disseminated. An alternative solution is the development of bio-inputs by addressing technological, regulatory and market issues with specific attention to potential risks on human and ecosystem health.
* **Water management to address climate change**
	+ In the context of increasing climate change, the need for better monitoring and innovative solutions is more and more important to deal with risks (drought and flood) and to manage water for agricultural production. Beyond large irrigated schemes, the R&I should help actors develop new practices (soil management, identification of adapted crops and cropping systems, adapted agroforestry systems, etc) and technologies including drip-irrigation and the mobilisation of renewable energy, new participatory water management processes, etc.
* **Adapted mechanisation for small-scale farmers to increase productivity and farmers’ incomes**
	+ Low labour productivity is a key issue to be addressed to improve production and make farmers activities more attractive and less painful especially for youth and women. Agricultural production and processing require adapted mechanisation for small-scale farmers and processors. Animal traction is still the most effective option in many African countries but a few R&I programmes are working on developing alternative solutions. Small tractors and adapted implements are also needed to support agroecological systems with local capacities for production and maintenance. This raises issues of technologies, institutions and policies.
* **Digitalisation for agroecology**
	+ Digital tools are developed and more and more used in the agricultural sector in Africa to monitor crops and manage resources such as pasture or water, to facilitate access to markets (price information, traceability, etc.) and services (inputs, advisory services, etc.). They are used by farmers and more often by practitioners. However, there is a lack of attention paid to digital tools for agroecology no matter how critical they are to co-create and share knowledge (agroecological practices and farm management, access to inputs for agroecology, development of economic and social services) adapted to local contexts and based on local and scientific knowledge. Beyond technology development, issues at stake relate to capacities (farmers, advisers) at individual and organisation levels and to governance of data (privacy, sharing of property rights, etc.)
* **Value chains to scale agroecology**
	+ It is a priority to scale agroecology through value chains able to valorise agricultural production based on agroecological principles in order to increase farmers’ incomes. Several options should be envisaged. First, valorizing agricultural products with different mechanisms to be assessed and improved (organisational set-up, policies, capacities) such as urban markets for short value chains or certification schemes including participatory ones. Secondly, improving processing and trading based on circular economy and renewable energy, aligned with a green transition and addressing technological, economic and institutional challenges. Thirdly, strengthening specific value chains with high ecological and economic potential such as legumes (soybean, beans, forage trees, etc.) or agroforestry products (shea, cocoa, etc.) at different steps of the value chain: production in integrated and diversified farming systems, processing to adapt to market needs, and consumption
* **Innovation service supports**
	+ Farmers need support to develop and improve agroecological farming systems in a changing context. However, advisory services and other innovation support services (incubators, innovation platforms, etc.) are to be adapted or strengthened to provide relevant and effective services with a holistic farm approach, based on the principles of agroecology and aimed at strengthening capacities and valorising local knowledge. There are open questions about the methods to be used and the capacities required to provide services, about the governance and funding mechanisms that should be in place and finally about the performance of the agricultural innovation systems at local, service and policy level.
* **Institutions and policies as drivers for agroecological transitions**
	+ The food system transition depends on the institutional and policy landscape. Global, continental, and national policies drive the food systems transition and may shape an enabling environment to scale agroecology. However, there is a need to assess and support these policies to effectively contribute to changes. The agroecological transition requires new indicators (economic, social and environmental) and adapted monitoring systems to assess the performance of food systems based on agroecological principles. Modelling tools at farm or country levels are also useful to assess to what extent and under which conditions agroecology can address current challenges (food security, climate change, biodiversity loss, etc.). Dialogue with key stakeholders (farmers, civil society, private sector, policy makers) is a key step to define relevant questions, shape the analytical framework, discuss the results, and propose solutions.

**ANNEX 2 : Criteria to assess the RMRN**

Technical criteria for the proposal

* **Contribution to the 13 principles of agroecology** (three blocks, see the HLPE report on “AE and other innovative approaches, 2019):
	+ Improve the efficiency of resource use: 1) Recycling of renewable resources and closure of the cycles of nutrient and biomass resources, 2) Reduction of external inputs.
	+ Building resilience: 3) Soil health, 4) Animal health, 5) Biodiversity at different levels, 6) Synergies to foster positive ecological interactions, 7) Economic diversification.
	+ Ensure equity / social responsibility: 8) Co-creation of knowledge, 9) Social values and types of diet, 10) Fairness to ensure dignified and reliable livelihoods, 11) Connectivity to guarantee proximity and trust between producers and consumers, 12) Governance of land and natural resources, 13) Participation.
* **Multidisciplinary and multistakeholder approach** with a participation of non-research organisations and clear methodology for participation
* **Holistic approach** (different components and interactions, different levels of analysis/intervention, different dimensions such as technology, capacities, institutions, and policies)
* **Capacity strengthening** objectives/activities for practitioners, policy makers
* **Effective link with policy makers** at national, regional, continental level

Institutional criteria

* **Thematic expertise** – together the members of the RMRN have proven expertise and experience in fields related to the R&I proposal and agroecology.
* **Location** : the RMNA is composed of organisations based in different countries of the same region.
* **Governance structure** - the RMRN comes up with an operational governance structure with well-defined mechanism(s) and hierarchy for decision-making.
* **Management and financial capacity** - the members of the RMRN have appropriate technical and scientific human resources as well as organisational and administrative capacity conducive to stable operating conditions over the period of engagement.
* **Gender-balance sensitivity** - The RMRN provides opportunities to practitioners, scientists and policy makers through a gender-sensitive approach and promotes the role of women/gender equality in STI.
1. FAO. The 10 elements of agroecology guiding the transition to sustainable food and agricultural systems, http://www.fao.org/3/I9037EN/i9037en.pdf [↑](#footnote-ref-1)
2. HLPE 2019. Agroecological and other innovative approaches for sustainable agriculture and food systems that enhance food security and nutrition. A report by the High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome <http://www.fao.org/3/ca5602en/ca5602en.pdf> [↑](#footnote-ref-2)
3. For example, in Europe “agroecology” could most appropriately focus on climate change mitigation (lowering of GHG emissions), reducing inputs, reduce environmental externalities (pollution of air, water and soil), improving soil health, use of renewable energy, boosting agroecological processes, increasing agrobiodiversity, etc. In Africa it would rather aim at improving production and productivity with a holistic approach including soil health, climate change adaptation, integrated management of natural resources (water, land, forest), agroforestry, boosting productivity of indigenous crops, leveraging ecological processes for productivity increase, maintaining agrobiodiversity, etc. [↑](#footnote-ref-3)
4. In East Africa the selection of RMRN followed a different path. [↑](#footnote-ref-4)