



## Market-driven, Resilient and Nutritious Agri-food Systems in the Humid zones of West and Central Africa (WCA)

### Initiative Lead and Co-Lead

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### Primary CGIAR Action Area

Resilient Agri-food Systems

### Estimated 2022 - 2024 Budget

\$40 - \$60 M

### Challenge

Approximately 552 million people live in WCA, the majority in rural areas, but with some of the highest rates of urbanization in the world (>4% annually). Economic activity in 2020 contracted by 2.1%, due to a weaker external environment and measures to contain the COVID-19 pandemic. Agriculture and food are crucial sources of livelihood, providing 30-50% of GDP and income and livelihoods for 70-80% of the population. Economic growth, food security, nutrition and environmental health are challenged by rapid population growth, high unemployment, and the climate crisis. Human and environmental health issues are increasing due to pollution of water and soils, industrial and urban waste, as well as unhealthy and ultra-processed foods. Agriculture is dominated by smallholder farms reliant on rain-fed production and natural soil fertility maintenance. Rapid land degradation, disruptive forces of climate change, increasing invasive pest, changing disease patterns, ailing markets, poor infrastructure, non-supportive policies, limited access to quality seeds of resilient and nutritious varieties, and high post-harvest losses exert negative impacts on food systems. Limited opportunities for youth and women; and increasing conflicts (including terrorism and violent disputes between animal herders and farmers) restrict achieving the enormous agricultural transformation potential of the region. With 75% of the population under the age of 35, the region has one of the youngest populations in the world. In rural areas, young people are mostly landless, marginally employed, and suffer from poor working conditions and exploitation. The recent COVID-19 pandemic has slowed any progress being made in agriculture and related sectors.

### Objective

This initiative aims to build more resilient, climate-smart, nutritious, gender equitable and viable food production system in three humid agro-ecologies of WCA through development and scaling of novel and inclusive production and post-harvest technologies, participatory decision-making and planning, and informed governance systems. Incorporating innovations from other One CGIAR efforts, it will:

- i. Promote and facilitate adoption, through innovative scaling, of improved and climate-smart farming practices to increase sustained production of nutritious food crops and animal products;
- ii. Increase skills of value chain actors in appropriate production of quality seed and crops, post-harvest handling, and consumption practices that support food and nutrition security while minimizing environmental damage;
- iii. Support balanced food baskets by promoting increased diversity of household production systems;
- iv. Harness community action to implement large-scale climate-smart practices and reduce vulnerability to climate change by ensuring that farmers, other value chain actors and governments have digital access to and use timely climate information and personalized agronomic practices for improved decision making;
- v. Improve youth engagement in agribusinesses and women and youth empowerment to ensure increased control on resources by women and other marginalized groups, and job creation, notably for the youth;
- vi. Develop sustainable, productive, diversified and resilient food production landscapes with minimal impact on water, land and nature through informed participatory, gender-balanced and inclusive planning and implementation; and
- vii. Conduct research on scaling readiness and processes, deploying experimental analyses, citizen science and consultative monitoring platforms, to guide scaling efforts and generate evidence that stimulates complementary investments into the Initiative.

### Theory of Change

The entry point will be to create effective public-private sector partnerships and increase private sector-led market opportunities for smallholder farmers as pull factors for innovation, adoption and impact creation. Multi-stakeholder platforms will provide timely feedback and adjustment mechanisms and inclusive agri-food business models will enable beneficiaries to adopt improved practices and access markets. Market demand, participatory gender-differentiated needs and opportunity assessment will underpin the co-design of gender-transformative innovations with beneficiaries considering local conditions and know-how. Scaling readiness assessment of innovation "packages" will be based on state-of-the-art knowledge, enabling productive environments under progressive climate change, and economic efficiency using experimental and observational evaluations. Successful innovations will be out-scaled through opportunities identified during project design. Out-scaling tools like demand creation campaigns, field demonstrations, spatial and climate analyses, machine learning, and citizen science will be used to map out and reach hotspots for change and scaling domains to guide investments towards increased success rates and higher value for money. This will tailor the interventions and increase innovation adoption. The adoption of climate-smart and digital technologies, climate information systems, planning at the landscape level, and innovative gender-responsive, youth-prioritized business models will lead to outcomes that positively affect youth and women livelihoods, smallholder productivity, climate risk awareness and preparedness and consumption of more diversified nutritious food. Through large-scale adoption, beneficiaries will sustainably improve their food and nutrition security, access agriculture-related jobs, generate wealth, move towards gender equality and adapt to climate change while protecting environmental health and biodiversity, thus contributing to 2030 Sustainable Development Goals.

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### Highlights

The initiative will stimulate and match the demand for diverse nutritious and healthy food (including roots, tubers, plantain, rice, maize, vegetables, fish) based on local intensified, diversified, economically viable, healthier and safer food production systems supported by sustainable seed systems, climate-smart management practices, and market integration.

The initiative will, jointly with existing providers, improve and complement digital services for small-scale farmers, value chain actors and governments for informed decision making through data analysis and information and provide climate and agronomic advice, early-warning, pest management, relevant commodity price data, access to finance and near real-time deforestation monitoring.

The initiative will create healthy and sustainable food production landscapes minimizing the impact of agriculture on land, water and other environmental resources. It will improve food safety and human, animal and environmental health through inclusive governance of the landscapes and participatory circular economy approaches for sustainable agricultural and postharvest practices.

Through strong public-private partnerships and innovative financing, the initiative will develop, test, and scale effective input and output market linkages, access to finance, and post-harvest innovations that generate income-earning opportunities, with a focus on empowering youth and women; concurrently contributing to poverty reduction and less wasteful and healthier food systems.

The initiative will deploy the Scaling-Readiness approach and participatory multi-stakeholder platforms for effective, inclusive and gender-responsive scaling within and across landscapes. Advanced foresight, mixed-method monitoring, evaluation learning and accountability (MELA) tools will be used to generate evidence for learning and communicating success stories and methods to a range of stakeholders.

### Work Packages

	Scope of Work	3-year Outcomes
Sustainable Intensification and Diversification for Nutritious and Resilient Food Production through Sustainable Seed and Management Systems	Pursue demand-creation to promote nutritious foods; co-design cost-effective diverse sustainable food production systems to assure food and nutrition security; develop business models in sustainable seed system development; promote integrated management practices for water, soil fertility, pest and disease; and test and disseminate gender-transformative approaches to diversified and intensified farming systems.	At least 80,000 smallholder households have accessed and 20% use at least 5 improved climate resilient nutrient-dense crop varieties and adopted at least 6 good agricultural practices, with at least a 20% increase in the women's empowerment in agriculture index (WEAI) and a 30% increase in household dietary diversity scores.
Informed Digital Agriculture for Climate Resilience - Managing Climate Risks and Accessing Services	Build resilience and reduce climatic risks in smallholder systems by scaling inclusive climate-smart agricultural practices and technologies bundled with accessible and gender-targeted digital climate / agricultural / nutrition advice, finance and agronomic inputs, building on and complementing public and private sector schemes/partners to reach millions of farmers and value chain actors.	Building on existing platforms and schemes farmers (5 Million), value chain actors (50) and governments (5) will use improved timely climate information and early warning systems for improved decision making, which contribute to managing food and climate security risk, adapting to climate change and decreased deforestation rates, and improved resilience of male and female farmers..
Sustainable and Inclusive Landscape Management for a Healthy Environment and Safe Food	Develop sustainable landscape management plans and inclusive governance of agro-ecologies through community-engaged participatory approaches targeting soil health, water resources and waste management. Validate one-health approaches; pursue gender equity in resource access; investigate circular economy chains for waste-reuse; promote use of sustainable agronomic practices for minimized negative impact at landscape level.	At least 100 rural communities develop informed and inclusive land and water development plans to diversify income from agriculture sustainably based on one-health approach principles, increase production from agriculture, livestock/aquaculture, create rural jobs, stability, resilience and inclusivity, and hold dialogues to address gender inequalities concerning resource access and management structures.
Youth and Women Entrepreneurship Models in Food Value Chains	Catalyze gender-responsive youth entrepreneurship and job creation that: uses digital support tools to produce healthy value added food products; reduces post-harvest losses and increases efficient processing and storage; strengthens SMEs by linking entrepreneurs to credit and insurance services; and builds capacities in business acumen for youth and women.	At least 20,000 youth and 15,000 women are engaged in value-added activities related to agriculture. Of these, at least 50% have access to credit and credit worthiness of youth-led businesses provides employment and technical services to communities, resulting in increasing income by 50%. Post-harvest losses are reduced by 20%.
Innovation in Scaling Design, Implementation and Monitoring, Evaluation Learning and Accountability (MELA) Tools and Processes	Integrate and validate gender-transformative scaling readiness in program implementation; roll-out integrated public-private sector partnerships (PPPs) and local extension services for scale and impact; leverage financial services; deploy spatial analyses and advanced foresight and impact assessment to guide investments; use MELA tools and platform feedback to refine innovations and improve impact.	At least 10 efficient tools and methods are adopted for mapping and monitoring scaling domains for technologies to guide development of smart investments. Remote sensing, machine learning, spatial analyses, citizen science, consumer preference, advanced impact assessment and MELA tools are deployed to map scaling domains and aid monitoring and evaluation.

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### Impact Area Contributions

<b>Nutrition, health &amp; food security</b>	Year-round enhanced diet quality, improved environmental safety, and sustained productivity on WCA smallholder farms through uptake of diverse, more heat tolerant, shorter duration nutritious crops/varieties and appropriate integration of small livestock/fish into selected production systems alongside investment in improved soil, water and knowledge management, and post-harvest storage and processing techniques.
<b>Poverty reduction, livelihoods &amp; jobs</b>	Increasing demand for nutritious foods and locally-sourced livestock/fish feed ingredients will create a market pull for nutritious products and their by-products, creating opportunities for value addition through economically-viable businesses along the value chains. Investment in gender-responsive youth skill development, and a better enabling environment will contribute toward long-term poverty reduction.
<b>Gender equality, youth &amp; social inclusion</b>	Building of more equitable agri-food systems will be achieved through 1) participatory planning of land and water resources to enable inclusive community access to resources for crop, livestock, and fish production; 2) gender-transformative community dialogues focused on empowering women and marginalized groups; 3) youth and women capacitation with agribusiness/production skills.
<b>Climate adaptation &amp; greenhouse gas reduction</b>	Investment in the 4 Rs to ensure transformed food systems are climate adapted due to 1) REROUTING by scaling climate-smart agriculture practices; 2) de-RISKING by providing timely digital climate, bio-risk (pest and disease) and agronomic information, 3) REALIGNING by leveraging sustainable finance for smallholders and 4) REDUCING rates of deforestation.
<b>Environmental health &amp; biodiversity</b>	Sustainable use for land and water resources and minimizing the impact of agriculture is achieved through inclusive planning of resources for productive and non-productive uses, including nature and other non-monetized ecosystem services, avoidance of unnecessary land clearing by raising productivity of cultivated land, and investigating potential of underutilized forest products.

### Impact on SDGs



### Regions

West and Central Africa (WCA)

### Countries



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### Innovations

Evidence for proposed set of technologies for smallholder production system, including underutilized and/or traditional but nutritious crops, in different agro-ecologies that are designed and evaluated not only by commodity yields (outputs), but by production per hectare of key nutrients, soil health indicators, estimates of water use efficiency and economic value.

One stop digital climate and agricultural advisory services for building resilience and reducing risk along the value chain on financial and marketing services, crop and practice choices, and biorisks tailored to the local conditions and expected weather climate, and deforestation monitoring.

A documented participatory toolset for creating inclusive landscapes. The toolset combines validated participatory tools and approaches to create climate-resilient water and land sources and plans that are owned, implemented and controlled by rural communities to sustainably develop and manage resources for increased and diversified agricultural production and income.

A scalable version (including new financing mechanisms) of the mind-set changing Start Them Early Program (STEP) piloted in WCA which integrates agribusiness studies into secondary schools through course work and experimental learning, stimulating youth and increasing their capacities to exploit employment opportunities in agriculture.

Novel spatial technologies based on machine learning and citizen science for 1) mapping scaling domains that guide investments, 2) informed decision-making processes, and 3) cost-effective Monitoring, Evaluation, Learning and Accountability (MELA), the latter combined with virtual feedback sessions with stakeholders.

### Key Partners

<b>Demand</b>	Foundation	Tony Elumelu Foundation (Private foundation in Nigeria supporting short-term youth entrepreneurship training for African youth)
	Government	Government Ministries (esp. agriculture, health, and environment) (The objectives of the project are directly supporting key government programmes from the local development point of view which is in line with the spirit of central government priorities).
		National Agricultural Research and Extension Systems in the target countries
Private Sector	Animal and Fish Feed Industries (The high cost of concentrates is driving interest in diversification of feed sources)	
	Farmer and processor organizations; food processing companies (Agricultural technologies and innovations (T&Is) have been a primary factor contributing to increases in farm productivity and production for economic growth in developing countries, therefore the end-users of T&Is as key demand partners in this project are farmer and processor organizations as well as food processing companies.)	
<b>Innovation</b>	Academic, Training and Research	CORAF (CORAF is an international association of national agricultural research systems in 23 West and Central African countries with the mandate to increase the use of appropriate technologies and innovations in the region.)
		International Centre of Insect Physiology and Ecology (ICIPE) (ICIPE works in a holistic and integrated approach through a 4-H paradigm comprising "Human, Animal, Plant and Environmental Health", with the aim of improving the overall health of communities in tropical Africa, by addressing the interlinked problems of pests and disease vectors, environmental degradation and climate. This approach will expand towards the concept of One Health by integrating key components.)
		World Vegetable Center (World Vegetable Center has a basket of technologies and innovations on vegetables if scaled up in the region will improve the nutrition of the population including women and youth.)
	Private Sector	Financial services for agriculture (Several initiatives either carried by national, private and donor funded institutions in target countries are currently implemented to improve access to credit and insurance to smallholder farmers. Identified finance institutions in each country will be fostered to be part of the multi-stakeholder partnership set down with innovation platforms to facilitate their interaction with farmers whom most of the time are not aware of their existence and the type and quality of services they can offer.)
Service providers (e.g. GODAN for digital tools; ESOKO for agricultural prices) (Service providers including the private agro-dealers, digital solutions providers, climate information providers, credit and insurance providers are part of the multi-stakeholders' platform for technologies and innovations upscaling and adoption for improved food and nutrition security)		
<b>Scaling</b>	Academic, Training and Research	CORAF (The partnership with CORAF will bring to the consortium an adding value in scaling. CORAF and its constituencies namely the national agricultural research systems in 23 West and Central African countries have the mandate to increase the use of appropriate technologies and innovations in the region)
	Government	Government Programs funded by IFAD, World Bank, African Development Bank Technologies for African Agricultural Transformation (TAAT) programme, etc. (Linking to these separately funded development initiatives in the same target areas will enable additional beneficiary households to be reached, and enhance interaction with government partners)
	International NGO	CARE and/or Catholic Relief Services (Example of an international NGO that engages in agriculture and nutrition projects and would be the type of organization that would take the innovation packages to scale)
	Partner Country based NGO	Réseau des Organisations Paysannes et de Producteurs de l'Afrique de l'Ouest (ROPPA) (ROPPA is an initiative of West African farmers' and agricultural producers' organizations. It brings together 13 national member farmers' organizations (Benin, Burkina Faso, Côte d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Niger, Senegal, Sierra Leone, Togo) and farmers' organizations.)
	Private Sector	Consortium of Rice Seed Enterprises and Millers (COSEM-Riz) (COSEM-Riz through its agri-business model in rice value chain will promote the deployment of quality rice seed of high yielding and stress tolerant improved and climate smart-rice and other crop varieties within and across countries in the region.)

# West and Central Africa – Regional Integrated Initiatives (WCA – RII): theory of change

