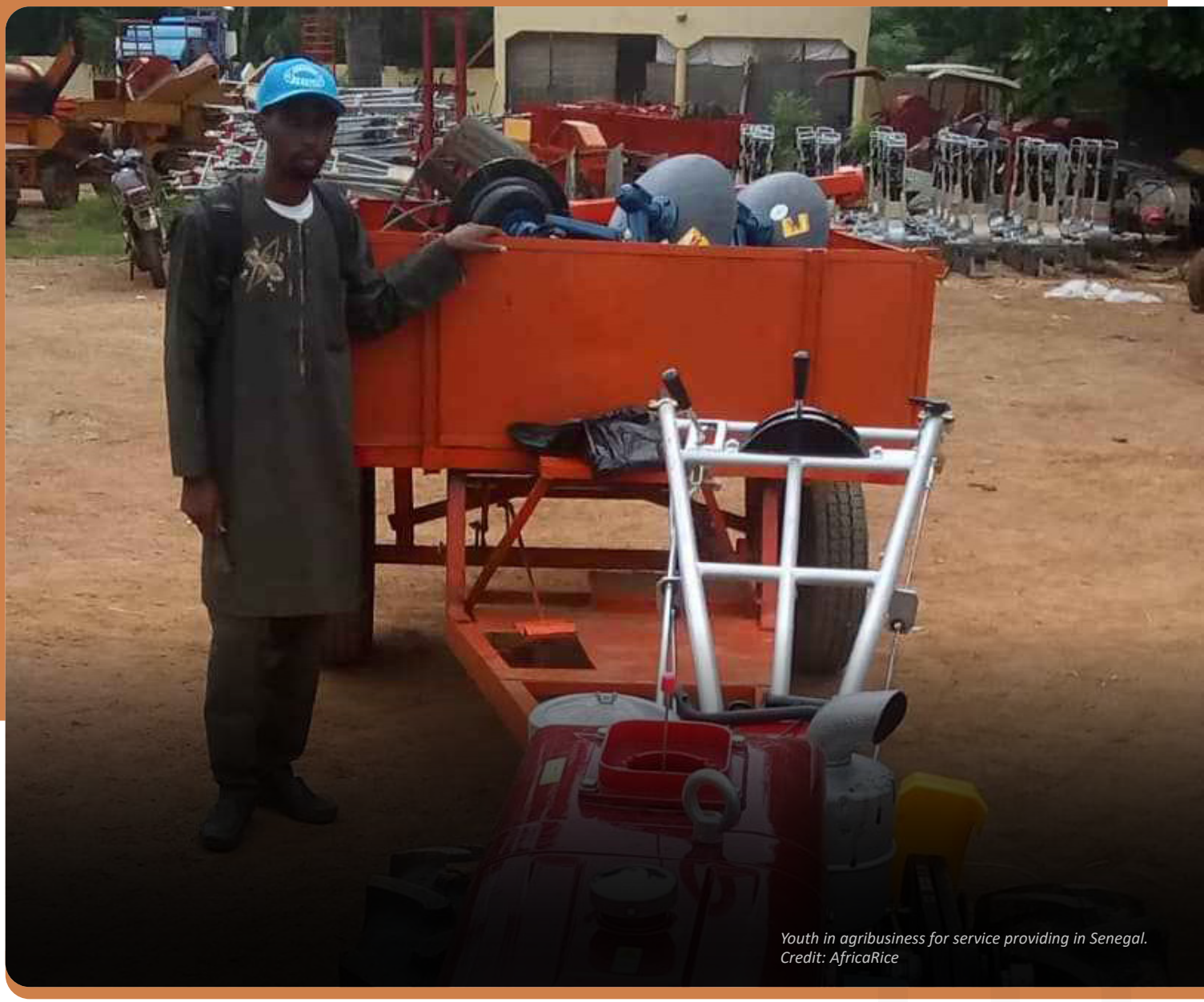
CGIAR

INITIATIVE ON
West and Central African
Food Systems Transformation



Youth in agribusiness for service providing in Senegal.
Credit: AfricaRice

CGIAR Research Initiative on

Transforming AgriFood Systems in West and Central Africa

Annual Technical Report 2024

Author: CGIAR Research Initiative on Transforming AgriFood Systems in West and Central Africa

Title: Annual Technical Report 2024: CGIAR Research Initiative on Transforming AgriFood Systems in West and Central Africa

Suggested citation: CGIAR Research Initiative on Transforming AgriFood Systems in West and Central Africa. 2025. Annual Technical Report 2024: CGIAR Research Initiative on Transforming AgriFood Systems in West and Central Africa. Montpellier, France: CGIAR System Organization. https://hdl.handle.net/10568/174262

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The Artificial Intelligence (AI) software ChatGPT was used to support the editing of parts of this report, specifically to improve clarity, grammar, and style. ChatGPT was not used to generate the content of the report. All edits made with AI assistance were reviewed and validated by the authors to ensure accuracy, coherence, and alignment with the original intent.

Acknowledgements

This work is part of the CGIAR Research Initiative on Transforming AgriFood Systems in West and Central Africa. We would like to thank all funders who supported this research through their contributions to the CGIAR Trust Fund: https://www.cgiar.org/funders.

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CGIAR Technical Reporting 2024

CGIAR Technical Reporting has been developed in alignment with CGIAR's Technical Reporting Arrangement. This annual report ("Type 1" Report) constitutes part of the broader CGIAR Technical Report. Each CGIAR Research Initiative/Impact Platform/Science Group Project (SGP) submits an annual "Type 1" Report, which provides assurance on progress towards end of Initiative/Impact Platform/SGP outcomes.

As 2024 marks the final year of this CGIAR Portfolio and the 2022-24 business cycle, this Type 1 Report takes a dual approach to its analysis and reporting. Alongside highlighting key achievements for 2024, the report also provides a cumulative overview of the 2022-24 business cycle, where relevant. This perspective captures the evolution of efforts over the three-year period. By presenting both annual and multi-year insights, the report underscores the cumulative impact of CGIAR's work and sets the stage for the transition to the 2025-30 Portfolio.

The 2024 CGIAR Technical Report comprises:

- **Type 1 Initiative, Impact Platform, and SGP Reports:** These annual reports present progress towards end of Initiative/Impact Platform/SGP outcomes and provide quality-assured results accessible via the CGIAR Results Dashboard.
- **Type 3 CGIAR Portfolio Practice Change Report:** This report provides insights into CGIAR's progress in Performance Management and Project Coordination.
- **Portfolio Narrative:** Drawing on the Type 1 and Type 3 reports, as well as data from the CGIAR Results Dashboard, the Portfolio Narrative synthesizes insights to provide an overall view of Portfolio coherence. It highlights synergies, partnerships, country and regional engagement, and collective progress.
- **Type 2 CGIAR Contributions to Impact in Agrifood Systems: evidence and learnings from 2022 to 2024:** This report offers a high-level summary of CGIAR's contributions to its impact targets and Science Group outcomes, aligned with the Sustainable Development Goals (SDGs), for the three-year business cycle.

The Portfolio Narrative informs the 2024 CGIAR Annual Report – a comprehensive summary of the organization's collective achievements, impacts, and strategic outlook.

Elements of the Type 2 report are integrated into the CGIAR Flagship Report, released in April 2025 at CGIAR Science Week. The Flagship Report synthesizes CGIAR research in an accessible format designed specifically to provide policy- and decision-makers at national, regional, and global levels with the evidence they require to formulate, develop, and negotiate evidence-based policies and investments.

The diagram below illustrates these relationships.

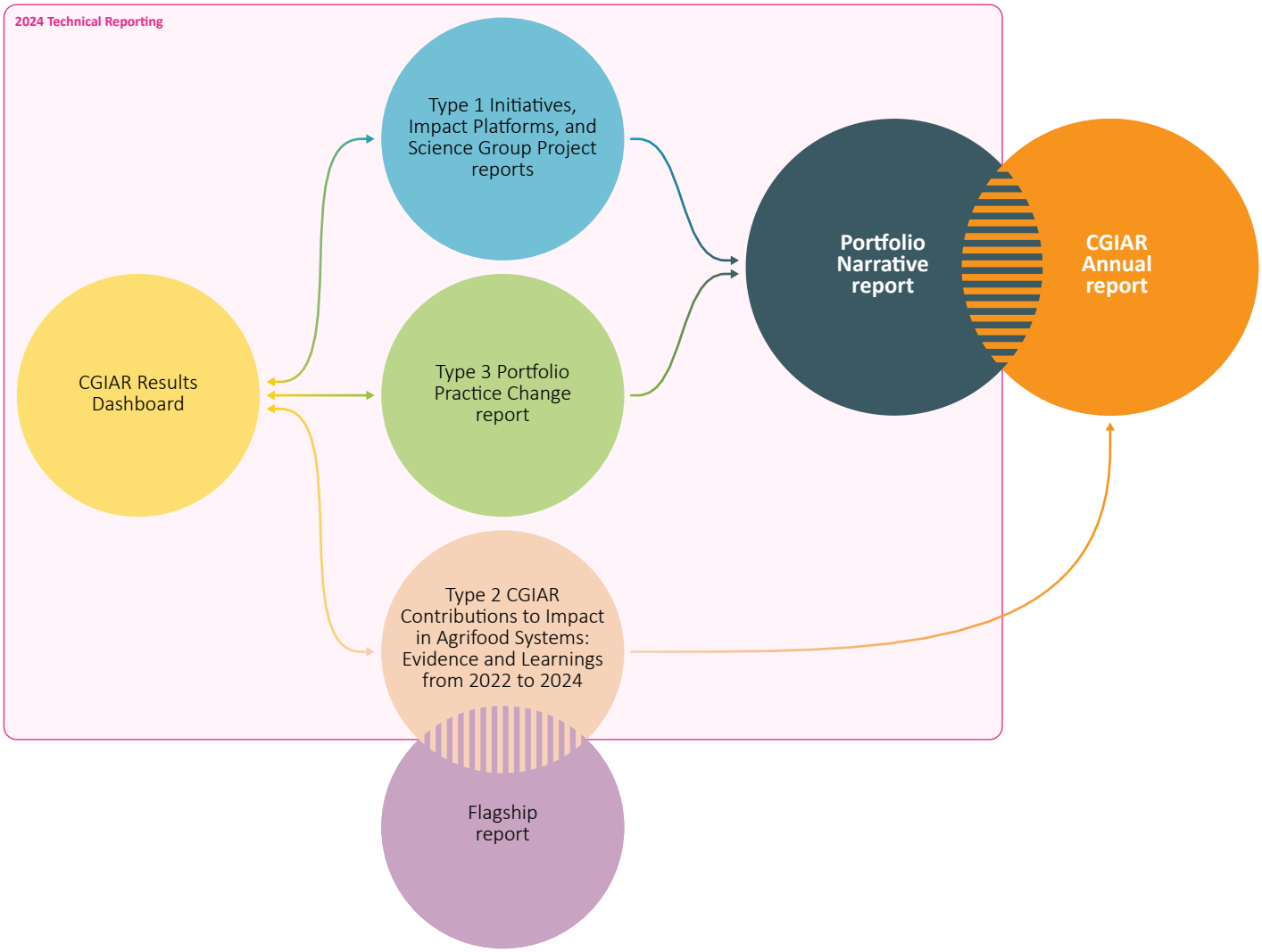


Figure 1. CGIAR's 2024 Technical Reporting components and their integration with other CGIAR reporting products.

Section 1: **Fact sheet, executive summary and budget**

Initiative name	Transforming Agrifood Systems in West and Central Africa
Initiative short name	West and Central African Food Systems Transformation
Initiative Lead	Aminou Arouna (a.arouna@cgiar.org)
Initiative Co-lead	Regina Kapinga (r.kapinga@cgiar.org)
Science Group	Resilient Agrifood Systems
Start – end date	01 April 2022 – 31 December 2024
Geographic scope	**Regions** West and Central Africa **Countries** Burundi · Côte d'Ivoire · Ghana · Nigeria · Rwanda · The Democratic Republic of the Congo
OECD DAC Climate marker adaptation score[1]	**Score 1: Significant** The activity contributes in a significant way to any of the three CGIAR climate-related strategy objectives – namely, climate mitigation, climate adaptation and climate policy, even though it is not the principal focus of the activity.
OECD DAC Climate marker mitigation score[1]	**Score 0: Not targeted** The activity does not target the climate mitigation, adaptation and climate policy objectives of CGIAR as put forward in its strategy.
OECD DAC Gender equity marker score[2]	**Score 1A: Gender accommodative/aware** Gender equality is an objective but not the main one. The Initiative/project includes at least two explicit gender-specific outputs and (adequate) funding and resources are available. Data and indicators are disaggregated by gender and analyzed to explain potential gender variations and inequalities.
Website link	https://www.cgiar.org/initiative/22-market-driven-resilient-and-nutritious-agrifood-systems-in-the-humid-zones-of-west-and-central-africa/

[1] The Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) markers refer to the OECD DAC Rio Markers for Climate and the gender equality policy marker. For climate adaptation and mitigation, scores are: 0 = Not targeted; 1 = Significant; and 2 = Principal.
[2] The CGIAR Gender Impact Platform has adapted the OECD gender marker, splitting the 1 score into 1A and 1B. For gender equality, scores are: 0 = Not targeted; 1A = Gender accommodative/aware; 1B = Gender responsive; and 2 = Principal.
These scores are derived from Initiative proposals, and refer to the score given to the Initiative overall based on their proposal.

EXECUTIVE SUMMARY

The CGIAR Initiative on Transforming Agrifood Systems in West and Central Africa has been instrumental in contributing to the five Impact Areas of the CGIAR through: (i) increasing access to quality seeds of nutrient-dense crop varieties; (ii) developing the matching of digital-supply-demand services to increase productivity and adaptation to climate change; (iii) providing opportunities and access to resources (market and finance) and tools for women and youth to engage in agribusiness; (iv) improving governance of natural resources; and (v) supporting partnerships and the scaling of the innovations.

Between 2022 and 2024, the Initiative reported 298 results over the period of 2022–2024, including 81 results in 2022, 140 results in 2023, and 98 results in 2024. The Initiative contributed to 155 knowledge products, including 27 journal articles. The numbers of knowledge products developed by the Initiative were 25 in 2022, 87 in 2023, and 43 in 2024. The number of journal articles increased from 6 in 2022 to 8 in 2023 and to 13 in 2024.

To transform the agrifood systems in West and Central Africa, the Initiative is developing and bringing to scale best-fit and climate-smart innovations and technologies and has reported 24 innovations. Most of the innovations the Initiative reported (16 innovations) were at a Scaling Readiness level of at least 6 out of a possible 9. Eight innovations were tested (uncontrolled testing) and are ready to go to the validation stage. Two innovations are already proven.

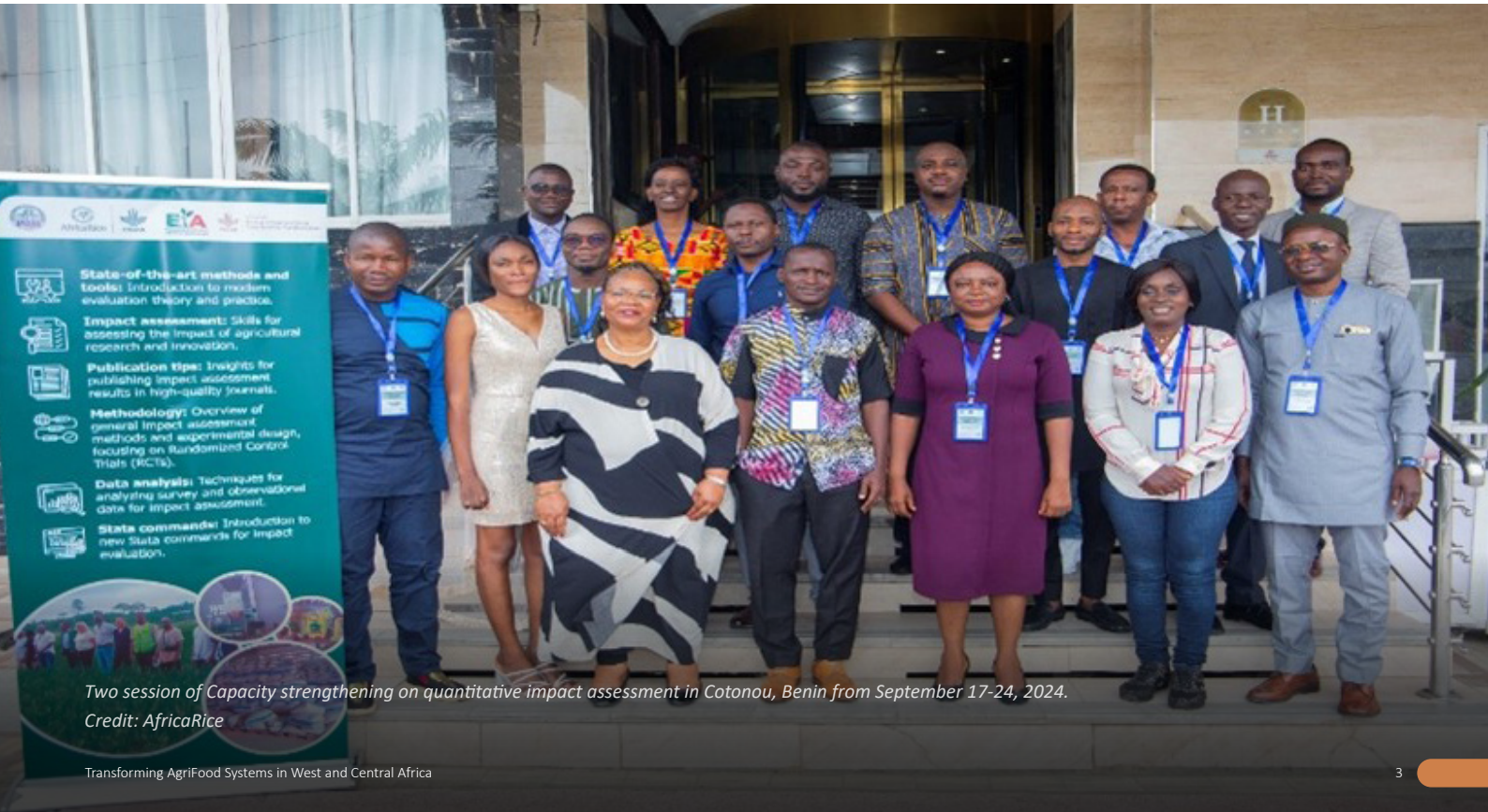
The innovations promoted by the Initiative include: a biopesticide against the diamondback moth on cabbage, provitamin-A-rich banana in Burundi, a seed supply chain (and piloting aquaculture) for Genetically Improved Farmed Tilapia in Nigeria, options for diversification in rice-based production systems in Côte d'Ivoire and Nigeria, integrating Brachiaria grass into maize-based cropping systems, introducing improved rice varieties to women's groups, use of vitamin-A-rich orange-fleshed sweetpotato puree as a partial substitute for wheat flour in baked products, and use of a wet hammer mill for processing cassava peels into high-quality livestock feed.

Following the Initiative's theory of change, it settled on four End of Initiative outcomes (EOIOs) and made strong progress in achieving them. The Initiative exceeded its initial targets for EOIOs 1, 3, and 4 and reached about 20 percent of its EOIO 2 targets. Through the Initiative, about 32,000 farmers were provided access to climate-resilient nutrient-dense crop varieties and good agricultural practices (including banana varieties rich in pro-vitamin A; four new varieties of orange-fleshed sweetpotato [OFSP]; four high-yielding, yellow-fleshed [high in provitamin A] cassava varieties; integration of cover crops in coffee and banana systems; and integration of Brachiaria into a maize-based cropping) and at least 15,000 farmers adopted banana varieties rich in pro-vitamin A in Burundi and adopted the integration of cover crops in coffee and banana systems in eastern DR Congo. A total of 51,044 individuals received agro-climate advisories, including 11,044 farmer promoters (FPs) through short message services (SMS).

About 18,000 youth, including 10,000 young women, benefited from value-adding activities — including producing vitamin-A-rich OFSP puree; processing high-quality cassava flour; using an improved technology for parboiing rice and producing vegetables; providing advice on rice farming through a RiceAdvice app and tractor services; and improved ways to produce rice, maize, and cassava — in Burundi, Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda. A total of 2,257 youth and 2,943 women from agricultural value chains received training in agricultural entrepreneurship. Four Inclusive Landscape Management Plans, containing gender equality and socially inclusive (GESI) innovations/strategies were endorsed by four local governments in Burundi, Ghana, Nigeria, and Rwanda. A study assessing the impact of the improved grain parboiling technology known as GEM (Grain quality enhancer, Energy-efficient, and durable Material) on women's livelihoods was conducted. Results showed that compared to the traditional system, the GEM system enabled women to gain an additional 140 kg of milled rice per ton of paddy, equivalent to USD 73 of supplementary income. Adoption of an iron-toxicity-tolerant variety of rice, named ARICA 6, increased rice yields by 330 kg per ha and net income by USD 120 per ha.

	2022	2023	**2024**
PROPOSAL BUDGET	$6,33M	$12,4OM	**$11,27M**
APPROVED BUDGET [1]	$4,14M	$4,56M [2]	**$4,29M** [2]

[1] The approved budget amounts correspond to the figures available for public access through the Financing Plan dashboard.
[2] These amounts include carry-over and commitments.



Two session of Capacity strengthening on quantitative impact assessment in Cotonou, Benin from September 17-24, 2024. Credit: AfricaRice

Section 2: **Progress towards End of Initiative outcomes**

Initiative-level theory of change diagram

This is a simple, linear, and static representation of a complex, non-linear, and dynamic reality. Feedback loops and connections between this Initiative and other Initiatives' theories of change are excluded for clarity.

CHALLENGE STATEMENT

- More than 552 million people live in West and Central Africa (WCA): the majority reside in rural areas, but the region has some of the fastest rates of urbanization in the world. Agriculture contributes 30–50 percent to GDP and provides income and livelihoods to 70–80 percent of the population. Out of 65 percent of the labor force in rural areas, 42 percent of the women practice smallholder farming. However, the sector has not been able to achieve its tremendous potential to feed the growing population due to the disruptive forces of climate change, including rapid land degradation and increasing incidence of invasive pests and diseases.
- Many consumers often resort to imported and ultra-processed foods, leading to an increase in the triple burden of malnutrition. Reduced biodiversity affects soil health and crop reproduction, while degraded landscapes are no longer One Health–sensitive. Markets and value chains are fragmented at best due to huge postharvest losses, dilapidated infrastructure, and a non-supportive policy environment. Youth and women have little capacity to transform food systems, and increasing conflicts often result in poor governance, further curtailing the region's potential.
- Despite these challenges, WCA also has great potential. Three-quarters of the region's population is under the age of 35, making it one of the youngest in the world and presenting the opportunity for the labor force to transform food systems. For almost five decades, CGIAR has been working to enhance rural outputs in the region, and there is much potential to leverage existing and emerging technologies to achieve impacts at scale. By focusing primarily on food and nutrition security and adapting agrifood systems to climate change, the Transforming AgriFood Systems in West and Central Africa Initiative will contribute to all of CGIAR's five Impact Areas.

RESEARCH QUESTIONS

- How can smallholder farming systems be made more productive and adaptive to climate change?
- What is the most effective way to address user demand for digital services, and what services best address small-scale producer and value chain risks in WCA?
- What service bundles and incentives do agricultural actors and farmers need for improved decision-making?
- How can ecosystem services/functions and biodiversity be sustained, water management and soil and biomass flow improved, and resilient agrifood systems supported for improved livelihoods?
- How can innovations be One Health–sensitive and scaled to contribute to a healthy and productive environment for livelihood improvement?
- What social constraints to gender and generational equality affect gender equality in agribusiness?
- What gender-transformative technologies and digital tools can enhance the sustainability of women and youth agribusiness hubs?
- Which are the most effective uses of advocates and media systems for mobilizing knowledge and community engagement, stimulating demand and investment, and changing behaviors?
- Which management system architecture (workflows, methods, tools, etc.) would increase the contributions of Scaling Readiness and partnership management tools to accelerate impact investments and catalyze the impact of research and innovation interventions at scale?

SPHERE OF **CONTROL**

Work Packages

Work Package 1

Sustainable Intensification and Diversification for Nutritious and Resilient Food Production through Sustainable Seed and Management Systems.

Work Package 2

Informed digital agriculture for climate resilience – Managing climate risks and accessing services.

Work Package 3

Inclusive landscape management: pathways for scaling land and water innovations for resilient agrifood systems.

Work Package 4

Youth and women entrepreneurship models in food value chains.

Work Package 5

Catalyzing investment and action for impact at scale.

Credit: R.Raman / AfricaRice

SPHERE OF **INFLUENCE**

End-of-Initiative Outcomes

End-of-Initiative Outcome 1

1 ▶ 5 ▶ Nutrient-dense crop varieties.

End-of-Initiative Outcome 2

2 ▶ Climate information and early warning systems.

End-of-Initiative Outcome 3

4 ▶ Youth and women engagement.

End-of-Initiative Outcome 4

3 ▶ Landscape management.

Action Area Outcomes

Resilient Agrifood Systems

1 ▶ 2 ▶ 3 ▶ **1** · CGIAR-NARS-SME networks use market segments, target product profiles to orient variety development and deployment towards those that provide larger scale benefits across the 5 Impact Areas.

2 ▶ **2** · National and private seed company breeding programs accelerate the development of varieties that provide larger scale benefits across the 5 Impact Areas.

4 ▶ **3** · National and local multi-stakeholder platforms are strengthened to become more effective and sustainable, addressing development trade-offs and generating strategies for effective food, land, and water systems transformation.

SPHERE OF **INTEREST**

Impact Areas

Nutrition, Health & Food Security

1 ▶
- Reduce cases of foodborne illness (600 million annually) and zoonotic disease (1 billion annually) by one third.
- End hunger for all and enable affordable health diets for the 3 billion people who do not currently have access to safe and nutritious food.

Poverty Reduction, Livelihoods & Jobs

1 ▶ 2 ▶
- Lift at least 500 million people living in rural areas above the extreme poverty line of US $1.90 per day (2011 PPP).
- Reduce by at least half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.

Gender equality, Youth & Social Inclusion

1 ▶
- Offer rewardable opportunities to 267 million young people who are not in employment, education, or training.
- Close the gender gap in rights to economic resources on, access to ownership of, and control over land and natural resources, for more than 500 million women who work in food, land, and water systems.

Climate Adaptation & Mitigation

2 ▶ 3 ▶
- Implement all National adaptation Plans (NAP) and Nationally Determined Contributions (NDC) to the Paris Agreement.
- Equip 500 million small-scale producers to be more resilient to climate shocks, with climate adaptation solutions available through national innovation systems.

Environmental Health & Biodiversity

2 ▶
- Stay within planetary and regional environmental boundaries: consumptive water use in food production of less than 2500 km3 per year (with a focus on the most stressed basins), zero net deforestation, nitrogen application of 90 Tg per year (with redistribution towards low-input farming systems) and increased use efficiency, and phosphorus application of 10 Tg per year.
- Maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed genebanks at the national, regional, and international levels.

Training Enumerator.
Credit: AfricaRice

Summary of progress against the theory of change

By focusing primarily on food and nutrition security and making agrifood systems more climate-adapted, the Initiative aimed to contribute to CGIAR's five Impact Areas through: (i) increasing access to quality seeds of nutrient-dense crop varieties and fish and to climate-smart good agricultural practices and reducing post-harvest losses; (ii) matching digital supply with demand services to increase productivity and adaptation to climate change; (iii) providing opportunities, access to resources (market and finance), and tools for women and youth to engage in agribusiness and to reduce existing gender gaps; (iv) improving governance of natural resources using landscape management approaches to improve environmental health and biodiversity; and (v) supporting regulatory and policy environments to create a socially inclusive platform for building public and private partnerships and scaling innovations.

The key research questions being tackled include: (i) how can smallholder farming systems be made more productive and adaptive to climate change?; (ii) what are the critical factors that incite consumer demand for biofortified and other nutritious foods?; (iii) what are the key determinants of adoption of digital-based knowledge information systems?; (iv) how can participatory water and land management support systems strengthen landscape resilience planning for enhanced production of nutrient-rich crops and fish?; and (iv) what are the social constraints that affect gender equality in agribusiness?

The activities of the Initiative depended on competencies from an alliance of six CGIAR Centres — AfricaRice, Alliance of Bioversity International and CIAT, CIP, IITA, IWMI, and WorldFish — plus partners in the national agricultural research and extension services (NARES), universities, other international research centres, including the West and Central African Council for Agricultural Research and Development (CORAF), the International Centre of Insect Physiology and Ecology (icipe), and the World Vegetable Center), and other CGIAR Initiatives. In addition to operating within existing partnerships and memoranda of understanding, sub-grant agreements were signed with partners such as the Crops Research Institute of the Council for Scientific and Industrial Research (CSIR) in Ghana; the Soil Research Institute of CSIR in Ghana; the National Agricultural Research Center (CNRA) in Côte d'Ivoire; the National Cereals Research Institute in Nigeria; the World Vegetable Center, icipe, and CORAF.

Between 2022 and 2024, activities were conducted according to the theory of change of the Initiative. To strengthen its partnerships, an annual partnership workshop was organized throughout the life of the Initiative . The Initiative organized a pause, reflect, and stakeholders' workshop in Accra, Ghana, 9–12 May 2023, with 60 participants, including 14 women, from 11 countries (Benin, Burundi, Côte d'Ivoire, DRC, Ghana, Kenya, Madagascar, the Netherlands, Nigeria, Rwanda, and Senegal). In 2024, an Annual and Wrap-Up Workshop of the Initiative was held 29 October–1 November in Abuja, Nigeria, in which the various stakeholders of the Initiative

took stock of the various activities carried out, developed a plan of activities, and laid out strategies for improving implementation.

To better understand the local conditions of the implementation sites, several surveys were conducted. Following 2022 activities, baseline surveys and e-registration of value chain actors were completed in the six target countries of the Initiative. In total, 22,701 value chain actors were e-registered and 5,660 were surveyed for the baseline. Data were collected for the Women's Empowerment in Agriculture Index (WEAI) in Côte d'Ivoire, Ghana, and Nigeria. Qualitative surveys on social constraints to gender and generational equality were conducted in Côte d'Ivoire and Ghana. Surveys and reports were completed on rice farming practices in Burundi, DR Congo, and Rwanda; on cocoa rehabilitation in Ghana; on modeling future water scenarios for cocoa farming in Côte d'Ivoire and Ghana; on diversified rice production systems in Côte d'Ivoire and Nigeria; on mapping the climate and agronomic digital advisory services landscape and enhancing flood early warning systems in Nigeria and Rwanda; and on engaging communities through citizen science for water quality and quantity assessments in Ghana.

The Initiative reported 298 results over the 2022–2024 period, including 81 results in 2022, 140 results in 2023, and 98 results in 2024. The Initiative contributed to 155 knowledge products, including 27 journal articles. The number of knowledge products developed by the Initiative were 25 in 2022, 87 in 2023, and 43 in 2024. The number of journal articles increased from 6 in 2022 to 8 in 2023 and to 13 in 2024.

To transform the agrifood systems of West and Central Africa, the Initiative aimed to develop and bring to scale best-fit and climate-smart innovations and technologies and reported 26 innovations over its three-year period. A total of 16 of the innovations that the Initiative reported were at least at a Scaling Readiness level of 6 out of a possible 9 levels, 8 of the innovations were tested (in uncontrolled testing) and made ready to go to a validation stage, and 2 innovations were proven .

The innovations promoted by the Initiative included: developing a biopesticide against the diamondback moth on cabbage, a provitamin-A-rich banana in Burundi, a seed supply chain (and piloting aquaculture) for Genetically Improved Farmed Tilapia in Nigeria, options for diversification in rice-based production systems in Côte d'Ivoire and Nigeria; as well as integrating Brachiaria into maize-based cropping systems, introducing improved rice varieties to women's groups, promoting vitamin-A-rich OFSP puree as a partial substitute for wheat flour in baked products, and making use of a wet hammer mill for processing cassava peels for livestock feed. In addition, One Health innovations for waste valorization were explored as well as ways of converting biomass waste into new value chains and supporting sustainable agro-livestock production and use of the Black Soldier Fly Larvae technology to produce animal feed and fertilizer.

Five digital agro-climate innovations were piloted, tested, or validated toward achievement of the EOIOs: (i) an early warning system (EWS) for fall armyworm (FAW) and Striga weed forecasting in Rwanda and Ghana, (ii) a Digital Agro-Climate Advisory (DACA) mobile application in Ghana, (iii) a decision-support system named RIICE (Remote sensing-based Information and Insurance for Crops in Emerging Economies) in Côte d'Ivoire, (iv) a lean data innovation tool for rapid diet quality monitoring, and (v) isotope techniques for developing climate-resilient crop varieties. In addition to these technologies, six women and youth agribusiness innovation platforms were installed in Côte d'Ivoire and Ghana. and 2,257 youth and 2,943 women from agricultural value chains trained in agricultural entrepreneurship, market access, and general skills in five countries (Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda). An Agro-Advisory Committee was established in Rwanda to scale the EWS. A stakeholders' consultation workshop was held to design a dissemination plan tailored to Ghana's context. Landscape Management Plans through multistakeholder dialogues were facilitated in Ghana and Nigeria. A Partnership Health Checkup Tool developed by the Initiative was successfully piloted with Ghana's GROWING project (Generating Revenues and Opportunities for Women to Improve Nutrition in Ghana). To increase the Scaling Readiness of these innovations, investment action plans for eight innovations were developed during an Investment Action Planning and Scaling Readiness workshop held in July 2023, in Kigali, Rwanda.

These innovations and technologies benefited several value chain actor groups, including youth and women. Agro-climate advisories were disseminated to approximately 51,044 individuals, including 11,044 FPs through SMS. One hundred smallholders are now accessing genetically improved tilapia as a nutrient dense food in Nigeria. We assessed the impact of the adoption of the GEM system on women's livelihoods, with results showing that adoption of the GEM system increased the rice output rate of women parboilers (dehulling return), which increased their income and food security. Compared to the traditional system, the GEM rice parboiling system allows women to gain an additional 140 kg of milled rice per ton of paddy and USD 73 of additional income. There was also a lower poverty rate of 26 percent among households that adopted the GEM system. These results were supported by women's perceptions that the output rate, better nutritional value, and reduction of broken rice during dehulling were major advantages of the improved parboiling system. Parboiling rice using the improved equipment and methods thus contributed not only to reducing hunger but also to improving the livelihoods of women. As of 2023, the GEM system has been introduced in 11 African countries. We also assessed the impact of an iron-toxicity-tolerant variety of rice, named ARICA 6, on different outcomes and investments in modern inputs by smallholder farmers. Results showed that the use of ARICA 6 increased rice yields by 330 kg per ha and net incomes by USD 120 per ha.

In total, 95 capacity sharing events were organized by the Initiative, which benefited 5,390 actors, including 1,655 women (31 percent). In 2022, 1,365 persons, including 490 women (36 percent), were trained, while 2,342 persons, including 518 women (22 percent) benefited from capacity strengthening activities in 2023. In 2024, the Initiative helped to train 1,683 people, including 647 women (38 percent). Capacity building activities were conducted along the value chains and were related to good agricultural practices, postharvest technologies, value chain improvement and entrepreneurship and business development skills for youth and women.

The Initiative's results and achievements were presented in at least ten conferences and workshops. For example, we organized a side event on inclusive digital agribusiness models for jobs and scaling innovations in West and Central Africa during the 8th African Agribusiness and Science Week (AASW8), held in Durban, South Africa, 5–8 June 2023.

The results of the Initiative target all five of CGIAR's Impact Areas, with "Climate change adaptation and mitigation" and "Gender equality, youth and social inclusion" Impact Areas being significant in 126 and 90 results of the Initiative, respectively, and being principal in 30 and 8 results, respectively. Similarly, CGIAR's "Poverty reduction, livelihoods and jobs" and "Nutrition, health and food security" Impact Areas were significant in 161 and 105 of the Initiative's results, respectively, and principal in 9 and 12 of the results, respectively. Finally, 107 and 18 results of the Initiative contributed significantly and principally, respectively, to CGIAR's "Environmental health and biodiversity" Impact Area. The results of the Initiative contributed to the following ten of the UN Sustainable Development Goals (SDGs), listed here in decreasing importance: SDG1, SDG2, SDG13, SDG5, SDG8, SDG15, SDG6, SDG10, SDG12, and SDG9.

Progress against End of Initiative outcomes

Following its theory of change, the Initiative contributed to four EOIOs. Strong progress was made in achieving the targets of these four EOIO, with the Initiative exceeding its targets for EOIO 1, 3, and 4, and achieving 20 percent of the target for EOIO 2.

Against the EOIO 1 target — at least 30,000 smallholder households are given access to climate-resilient nutrient-dense crop varieties and good agricultural practices, with at least 8,000 using five of the varieties and six good agricultural practices — the Initiative provided about 32,000 farmers with access to climate-resilient nutrient-dense crop varieties and good agricultural practices (including banana varieties rich in pro-vitamin A; four new varieties of OFSPs; four high-yielding, yellow-fleshed (high provitamin A) cassava varieties; integration of cover crops in coffee and banana systems; integration of Brachiaria grass into maize-based cropping) and at least 15,000 farmers adopted banana varieties rich in pro-vitamin A in Burundi or adopted the integration of cover crops in coffee and banana systems in eastern DR Congo.

Against the EOIO 2 target — 300,000 farmers use timely climate information and EWS for improved decision-making — about 51,044 individuals, including 11,044 FPs through SMS and 40,000 farmers through FPs, received agro-climate advisories. However, future scaling of the Initiative's six digital agro-climate innovations to enhance climate resilience and decision-making for smallholder farmers should help to reach more of the 300,000 farmers specified in EOIO 2.

Against the EOIO 3 target — 10,000 youth and 5,000 women are engaged in value-added activities related to agriculture — about 18,000 youth, including 10,000 young women, benefited from the Initiative's value-adding activities (e.g. vitamin-A-rich OFSP puree, processing high-quality cassava flour, rice parboiling and vegetable production, RiceAdvice service provider, and rice, maize, and cassava production) in Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda). A total of 2,257 youth and 2,943 women from agricultural value chains received training in agricultural entrepreneurship. Furthermore, 38 effective financial business models aimed at improving access to credit for youth and women. The impact of the GEM rice parboiling innovation on women's livelihoods was conducted, with results showing that compared to the traditional system, GEM allowed women to gain an additional 140 kg of milled rice per ton of paddy, equivalent to USD 73 of supplementary income. The adoption of the iron-toxicity-tolerant rice variety, named ARICA 6, increased rice yields by 330 kg per ha and net incomes by USD 120 per ha. Six processors were capacitated to adopt vitamin-A-rich OFSP puree as a partial substitute for wheat flour in baked products in Nigeria. Improved recipes and processing steps were provided for the production of bread, chapati, and crisps. Data were collected for the WEIA in Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda. The impact of the Initiative on WEIA will be assessed in 2025 .

Against the EOIO 4 target — at least two governments use inclusive approaches towards landscape management — four Inclusive Landscape Management Plans containing GESI-responsive innovations/strategies were endorsed by four local governments in Burundi, Ghana, Nigeria, and Rwanda. The Initiative facilitated the establishment of a 22-member farmer-based organization (FBO) and supported the district agriculture office in training them on managing FBOs and sustainable oil palm cultivation. The Initiative also piloted solar-powered shallow-tube well irrigation in the Doma-Rutu socio-ecological landscape in Nigeria.

Group photo on the initiative partners and participants.
Credit: AfricaRice

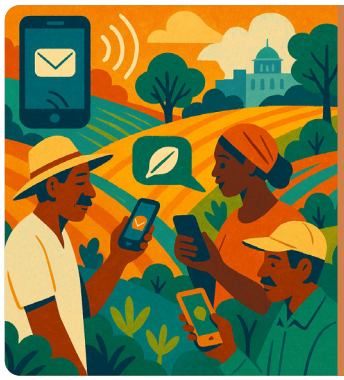
Progress against End of Initiative Outcomes

This infographic provides a concise summary of the Initiative's progress toward achieving its Theory of Change End-of-Initiative outcomes for the 2022-2024 period. By drawing on reported results, it offers a comprehensive synthesis of progress made against the established outcome targets, highlighting the Initiative's overall impact and key achievements at the conclusion of this three-year cycle.

EOIO 1

Nutrient-dense crop varieties and good agricultural practices

At least 30,000 smallholder households have access to climate-resilient nutrient-dense crop varieties and good agricultural practices, with at least 8,000 using five of the varieties and six good agricultural practices and having a 30% increase in household dietary diversity scores and at least 10 key partners in the next phase implementation plans will be consistently using three validated scaling tools.



EOIO 2

Climate information and early warning systems

At least 300,000 farmers, 20 value chain actors, and three governments use timely climate information and early warning systems for improved decision-making.

EOIO 3

Youth and women engagement

At least a 5 percent increase in the WEAI, and 10,000 youth and 5,000 women engaged in value-added activities related to agriculture, with at least 50 percent of them having access to credit.

EOIO 4

Landscape management and scaling tools

At least two governments use inclusive approaches towards landscape management, informed and inclusive land and water management plans are developed by 20 rural communities that will diversify income from agriculture and increase production to create jobs and stability.

Using the e-registration of value chain actors and phone surveys, about 32,000 farmers had access to climate-resilient nutrient-dense crop varieties and good agricultural practices (including banana varieties rich in pro-vitamin A; four new varieties of OFSPs; four high-yielding, yellow-fleshed [high provitamin A] cassava varieties; integration of cover crops in coffee and banana systems; integration of Brachiaria grass into maize-based cropping). At least 15,000 farmers adopted banana varieties rich in pro-vitamin A in Burundi and adopted the integration of cover crops in coffee and banana systems in eastern DR Congo.

Banana varieties rich in pro-vitamin A were promoted to address vitamin A deficiency among children and childbearing women in Burundi. In 2022, adoption rates of 45 percent and 12 percent were recorded in Gitega and Cibitoke provinces, respectively.

Four new varieties of OFSPs were released for cultivation by the national authorities in Burundi. Three OFSP varieties began going through pre-release processes in Rwanda.

Four high-yielding, yellow-fleshed (high pro-vitamin A) cassava varieties were released in Ghana.

10 large plantations, and 72 farmer associations with over 10,000 member farmers, adopted the integration of cover crops in coffee and banana systems in eastern DR Congo.

50 key partners participated in a partnership heath checker tools survey and pre-tested the scaling tools.

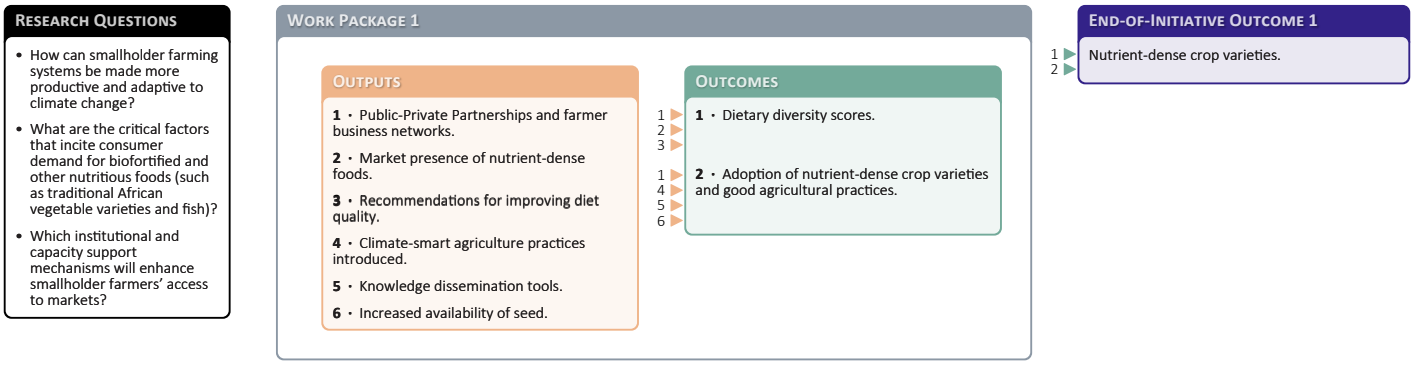
Adoption of the GEM rice parboiler innovation increased food consumption scores in households by approximately 13 points (15.96 percent).

Between 2022 and 2024, six digital agro-climate innovations to enhance climate resilience and decision-making for smallholder farmers were developed. Four digital tools became ready for scaling with three governments (Côte d'Ivoire, Ghana, and Rwanda) expressing interest in their adoption. Over 20 value chain actors were engaged, including the One Acre Fund; the Rwanda Agriculture and Animal Resources Development Board; the Ghana Meteorological Agency, eSoko, Ministry of Food & Agriculture, and Council for Scientific and Industrial Research in Ghana; the Society for the Development of Rice Cultivation, University of Ghana, and the National Agricultural Research Center in Côte d'Ivoire. In 2023, 51,044 individuals, including 11,044 FPs through SMS and 40,000 farmers through FPs, received agro-climate advisories and EWS predictions were disseminated through the eSoko platform in Ghana. Additionally, 126 experts were trained to extend adoption of Digital AgroClimate Advisories in six regions of Ghana. A consultation in Abidjan engaged 40 stakeholders to strengthen RIICE implementation in Côte d'Ivoire in 2023 and 2024.

As part of WP4 and using e-registration, about 18,000 youth, including 10,000 women, benefited from the Initiative's value-adding activities (e.g. vitamin A-rich OFSP puree, processing of high-quality cassava flour, rice parboiling, vegetable production, RiceAdvice service provider, and rice, maize, and cassava production) in Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda. A total of 2,257 youth and 2,943 women from agricultural value chains received training in agricultural entrepreneurship. Furthermore, 38 effective financial business models aimed at improving access to credit for youth and women. An assessment of the impact of the GEM innovation on women's livelihoods was conducted, with results showing that compared to the traditional system, the GEM system allowed women to gain an additional 140 kg of milled rice per ton of paddy, equivalent to USD 73 of supplementary income. Six processors were capacitated to adopt vitamin A-rich OFSP puree as a partial substitute for wheat flour in baked products in Nigeria. Improved recipes and processing steps were provided for processing bread, chapati, and crisps. Data were collected on the WEIA in Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda. The impact of the Initiative on WEIA will be assessed in 2025 .

Four Inclusive Landscape Management Plans, containing GESI-responsive innovations/strategies, were endorsed by local governments in Burundi, Ghana, Nigeria, and Rwanda. These Plans contained locally relevant recommendations on strategies for sustainable irrigation/subsistence farming, inclusion of marginalized groups, and gender-responsive soil and water management. These Plans piloted oil palm-legume integration for post-mined land reclamation in Ghana using a co-designed business model and a benefit-sharing mechanism. The Initiative facilitated the establishment of a 22-member FBO and supported the district agriculture office in training them on managing FBOs and sustainable oil palm cultivation. The Initiative piloted solar-powered shallow-tube well irrigation in the Doma-Rutu landscape in Nigeria. WP3 initiated the piloting of the AWARE flood early-warning and early-action platform in Nigeria and Rwanda. Stakeholders acknowledged the potential of AWARE and set up a plan for its integration in the national Flood Early Warning System in Nigeria.

WP1: Sustainable Intensification and Diversification for Nutritious and Resilient Food Production through Sustainable Seed and Management System



Work Package 1 progress against the theory of change

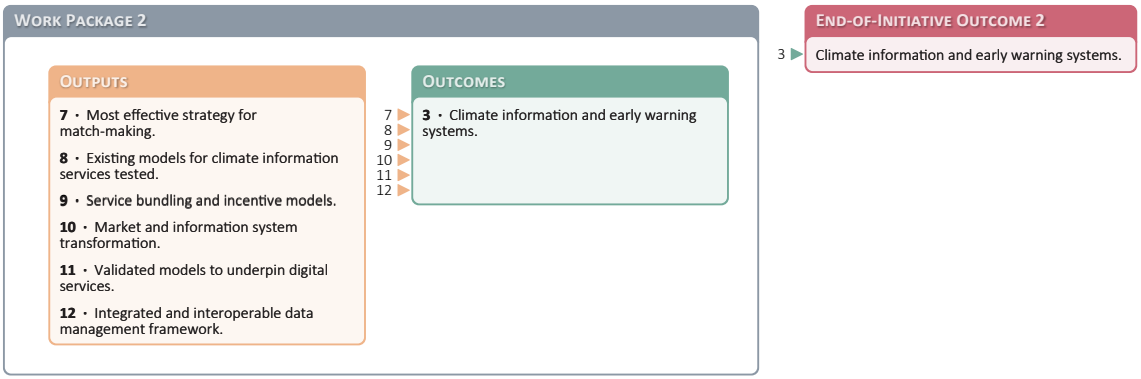
WP1 aimed to promote nutritious foods; to co-design diverse and sustainable food production systems, to promote good agricultural practices to address climate change and declining soil fertility, and to improve seed systems. Good progress was made in addressing the key research questions: which factors will spur consumer demand for nutritious foods; how can smallholder farming systems be made more productive and adaptive to climate change; and which institutional and capacity support mechanisms will enhance smallholder farmers' access to markets?

Progress between 2022 and 2024 included development of macro-propagation methods for producing healthy pro-vitamin-A banana planting materials. Stakeholders in DR Congo were trained on these methods. Similarly, training in the propagation of OFSP was conducted in three countries (Burundi, DR Congo, and Rwanda) where networks of trained decentralized vine multipliers were also established. In Ghana and Nigeria, training materials were developed and used to train stakeholders in vegetable seed production. In addition, three manuals (manual for Nile tilapia seed production, manual for biosecurity practices in tilapia hatchery production, and guidelines for best biosecurity practices) were distributed to relevant stakeholders. Small- and medium-scale hatchery operators and smallholder fish farmers were trained in seed supply and outgrowing genetically improved farmed tilapia. An agroecological package was designed for restoring degraded and abandoned farmland and reviving crop yields and approaches to restore coffee yields in degraded soils using nitrogen-fixing cover crops, shrubs, and fast-growing grasses. Coffee producers in eastern DR Congo were trained on these. Data were collected on rice production indicators in Burundi, DR Congo, and Rwanda through Sustainable Rice Platform standards and indicator surveys. In addition, the benefits of several diversification options in rice-based systems were evaluated in Côte d'Ivoire followed by studies on the performance of the systems. On-farm trials validated the benefits of cover crops in banana and coffee systems in eastern DR Congo. Also in DR Congo, positive results from research on integrating Brachiaria grass into maize-based systems to mitigate agricultural constraints have led to an expansion of Brachiaria multiplication by several farmer cooperatives. Field demonstrations of production practices for nutrient-dense vegetables were conducted in Nigeria to train farmers on good agronomic practices. Similarly, smallholder farmers in Ghana were introduced to the sack gardening technology to facilitate the production of nutritious vegetables for household consumption. Workshops on vegetable market development and the Zero Energy Cooling Chamber for reducing postharvest losses were also held. Data were also collected on willingness to adopt biofortified micronutrient-dense staple food crops including Zinc Rice, Vitamin A maize, Vitamin A cassava, and Vitamin A sweetpotato in Côte d'Ivoire, Ghana, and Nigeria.

WP2: Informed digital agriculture for climate resilience – Managing climate risks and accessing services

Research Questions

- What is the most effective way to identify and address user demand for digital services, and what services best address small-scale producer and value chain risks in WCA?
- What approach to matchmaking is most effective in creating a digital innovation system that ensures scaling and sustainability in digital service delivery?
- How can information and market systems be leveraged for effective dissemination of informed digital advisories at scale in an economically viable and sustainable way?
- What service bundles and incentives do agricultural actors and farmers need for improved decision-making?



Work Package 2 progress against the theory of change

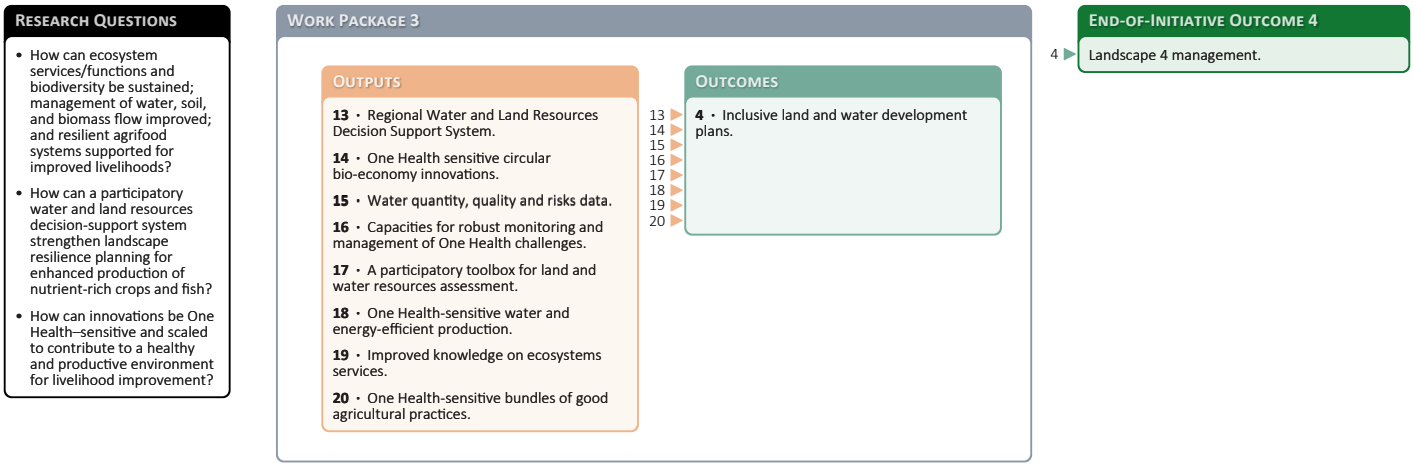
WP2 aimed to create new or improved digital services, contextualized and complementing existing digital services, for smallholder farmers, value chain actors, and governments for informed decision-making through data harmonization, governance, analysis, and tailored advisories. The WP contributed to developing and enhancing digital services to improve smallholder farmers' decision-making by addressing barriers to digital tool access and climate advisory services. The goal was to reach 300,000 farmers, 20 value chain actors, and 3 governments with timely climate information and EWS. The research question is related to knowledge on factors limiting access to, and use of, digital tools and climate advisory services by smallholder farmers in West and Central Africa.

Since 2022, WP2 piloted, tested, and/or validated five digital agro-climate innovations to enhance climate resilience and decision-making for smallholder farmers. These included: (i) an EWS for FAW and Striga forecasting in Ghana and Rwanda, (ii) a Digital AgroClimate Advisory (DACA) Mobile Application in Ghana, (iii) a RIICE tool for monitoring rice production in Côte d'Ivoire, (iv) a lean data innovation tool for rapid diet quality monitoring, and (v) isotope techniques for developing climate-resilient crop varieties. Four tools, including EWS in Rwanda, DACA in Ghana, and rapid diet quality monitoring in Nigeria, were made ready for scaling, while EWS in Ghana and RIICE in Côte d'Ivoire required further validation.

- The EWS for FAW and Striga forecasting in Rwanda was refined to improve accuracy (>75 percent). An Agro-Advisory Committee was established and agro-climate advisories were disseminated to approximately 51,044 individuals, including 11,044 FPs through SMS and 40,000 farmers through FPs in 2023. However, a 2024 survey in Rwanda showed only 50 percent SMS reach, highlighting gaps in dissemination.
- The DACA Mobile App in Ghana was customized, validated, and made ready for scale, with 126 experts trained to lead further adoption.
- The RIICE tool for rice monitoring in Côte d'Ivoire engaged 40 stakeholders in a 2024 consultation and remained in the pilot stage.
- Lean data innovation for diet monitoring was piloted in Nigeria, generating real-time insights on dietary quality.

WP2 continued to strengthen digital advisory services, ensuring sustainability and broader adoption in West and Central Africa.

WP3: Inclusive landscape management: pathways for scaling land and water innovations for resilient agrifood systems

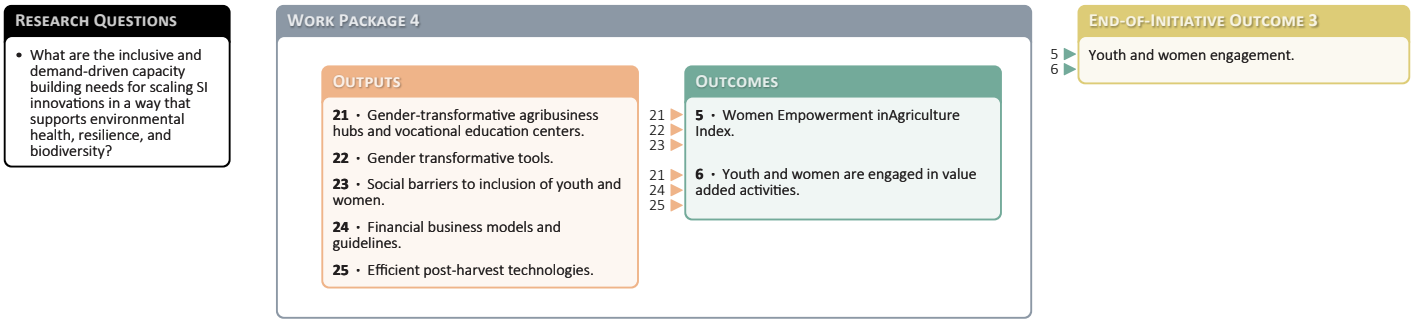


Work Package 3 progress against the theory of change

WP3 aimed to foster inclusive access and proper utilization of land and water resources as essential strategies for building resilient agrifood systems and livelihoods within a healthy and productive environment. The critical research questions were formulated around water and land management, One-Health-sensitive practices, and sustaining ecosystem services.

Between 2022 and 2024, WP3 conducted a scoping and needs assessment to identify water management priorities in the region. WP3 initiated the process of piloting Early Warning, Early Action and Early Finance (AWARE) for flood early-warning and early-action platforms in Nigeria and Rwanda. Stakeholders acknowledged the potential of AWARE and set up a plan for its integration into the national Flood Early Warning System in Nigeria. Both Nigeria and Rwanda are part of the AWARE platform. For a One-Health sensitive circular bioeconomy, a "champion" was identified and supported to implement the Black Soldier Fly technology for organic waste conversion into fish feed and organic manure in the Mankran landscape in Ghana. This technology was used as a demonstration site for farmers in the area. Citizen science was implemented for water quality monitoring and hydrological assessment in Ghana, where nine citizens were trained. The Inclusive Land Management Plan co-design process engaged and empowered 400 stakeholders (including citizen scientists, farm-households from 20 communities, local governments in 4 districts, NGOs, and research institutions). Farmers, extension workers, and NGOs were trained in the procedure for tube well construction and use of shallow groundwater with solar pumps for irrigation and dry-season agriculture. In addition, solar-powered shallow-tube well irrigation was piloted in Nigeria on about 200 ha of land for dry-season agriculture. A participatory toolbox for land and water resources management, a technical brief, and guidelines were developed. Oil-palm-legume integration for post-mined land reclamation was piloted in Ghana using a co-designed business model and a benefit-sharing mechanism. A 22-member FBO supported by the district agriculture office was trained on managing FBOs and sustainable oil palm cultivation. The FBO was then supported to reclaim a 22-acre post-mined site in the Mankran watershed in Ghana. This initiative is expected to restore ecosystems, improve soil fertility, enhance water quality, and create employment for youth and women, driving economic empowerment, especially if scaled.

WP4: Youth and women entrepreneurship models in food value chains



Work Package 4 progress against the theory of change

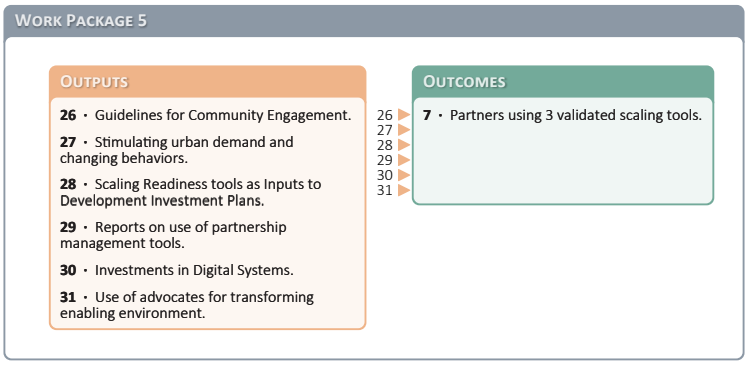
WP4 aimed to promote and prepare youth and women for agribusiness while addressing social barriers. Its research questions were related to mechanisms and policy advocacy tools for access to finance and market linkages; addressing social constraints to gender and generational equality in agribusiness; and scaling technologies and digital tools to enhance the sustainability of agribusiness hubs and to reduce post-harvest losses.

During the Initiative period (2022–2024), baseline surveys and e-registration of value chain actors were completed in the six target countries of the Initiative. In total, 22,701 value chain actors were e-registered and 5,660 surveyed for the baseline. Six gender-based and youth agricultural innovation platforms were strengthened in five countries (Cote d'Ivoire, Ghana, Nigeria, Rwanda and DRC). In the innovation platform, 2,257 youth and 2,943 women from agricultural value chains were trained in agricultural entrepreneurship, market access, and general skills in five countries (Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda). To create agribusiness opportunities for youth, we assessed farmers' willingness to pay for digital advisory services. Forty-nine per cent of farmers selected cash payment after harvest at USD 9.70 per ha for more than two seasons-contract as a first option. This evidence indicated that youth could develop businesses around digital tools to create job opportunities. Food processing activities were dominated by women. Six processors were capacitated on vitamin-A-rich OFSP puree as a partial substitute for wheat flour in baked products and 90 processors and feed millers were trained on the use of a wet hammer mill to process cassava peels for animal feed and fertilizer. Quantitative surveys were completed in three countries (Côte d'Ivoire, Ghana, and Nigeria) to evaluate the WEAI. To understand further the barriers to youth and women engagement in agriculture, a qualitative study was carried out in five countries (Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda) to provide insights on Women and Youth Empowerment in the Agricultural Sector. An assessment of the impact of the GEM innovation on women's livelihoods was conducted, with results showing that the GEM system allowed women to gain an additional 140 kg of milled rice per ton of paddy, equivalent to USD 73. We also assessed the impact of an iron-toxicity-tolerant variety of rice, named ARICA 6, on different outcomes and investment in modern inputs by smallholder farmers. Results showed that the use of ARICA 6 increased rice yield by 330 kg per ha and net income by USD 120 per ha. National partners (25 in total) from 18 countries were also capacitated in quantitative methods for impact assessment. To create agribusiness opportunities for youth, we evaluated farmers' perception and willingness to adopt fertilizer management using Ajinomoto byproduct fertilizer for high-market-value local rice varieties in the irrigated lowlands of Côte d'Ivoire.

WP5: Technology, innovation, communication, knowledge and stakeholder management for accelerating impact investments and catalyzing impact at scale

Research Questions

- Which are the most effective uses of advocates and media systems for mobilizing knowledge and community engagement, stimulating demand and investment, and changing behaviors to reach different target groups?
- Which monitoring, learning, and evaluation tools are most suited for rapid diagnosis and response to emerging concerns, and which contribute cost-effectively to monitoring progress, building evidence for impact, and designing future scaling efforts?
- Which management system architecture (workflows, methods, tools, etc.) would increase the contributions of Scaling Readiness and partnership management tools to accelerate impact investments and catalyze the impact of research and innovation interventions at scale?



Work Package 5 progress against the theory of change

WP5 aimed to contribute to agricultural transformation across West and Central Africa, focusing on empowering partners to achieve impactful outcomes at scale. Between 2022 and 2024, WP4 developed and tested tools to enhance partnerships for achieving impact at scale. The use of Investment Action Planning and Scaling Readiness tools through workshops held in Kigali, Rwanda, in July 2023, and online meetings in 2024 played key roles. Investment Action Plans for eight innovations were developed. While resource constraints posed challenges, partners successfully completed three investment plans for processing OFSP technologies, OFSP fresh root production and consumption, and for the Black Soldier Fly larvae composting technology, showcasing their commitment to scaling innovations. Valuable resources were developed, including guidelines for community engagement, which provided a roadmap for introducing climate-resilient crops and promoting best practices. Understanding consumer preferences was prioritized through a study on sweetpotato product popularity in Rwanda titled "Assessment of Preference and Demand for Sweet Potato Value-Added Products among Consumers in Rwanda," which guided targeted interventions toward stimulating urban demand and changing behaviors. The Scaling Readiness Framework was utilized to guide partners in crafting investment plans, ensuring they are well prepared to scale agricultural innovations effectively. Building strong partnerships was another focus, with the successful utilization of the Partnership Health Checkup Tool in Ghana's GROWING project in 2024. Training and communication tools such as videos, leaflets, and training manuals in national languages were produced for advocacy and popularization of OFSP technologies in Rwanda.

Work Package progress rating summary

WORK PACKAGE	PROGRESS RATING & RATIONALE
1	On track Significant achievements have been in line with the Plan of Results and Budget and the Work Package theory of change. Seven incremental innovations were promoted. Twelve short-term capacity sharing activities were conducted in person and involved 969 participants. Nineteen knowledge products were delivered that reported a range of completed studies and provided guides useful for scaling the innovations. While work on "recommendations for improving diet quality" was delayed by staff departure, most elements for this have been generated, including a methodology for rapidly monitoring diet quality at scale.
2	On track With four digital tools (EWS and DACA) ready for scaling and three countries (Côte d'Ivoire, Ghana and Rwanda) actively engaged in their adoption, WP2 made strong progress toward its goals. The Initiative was to ensure that these digital tools were effectively scaled, adopted, and utilized to enhance climate resilience and decision-making for smallholder farmers. More than 50,000 farmers received FAW, Striga predictions, and agro-advisories, although the number of farmers reached with climate information and advisories remained lower than the target, highlighting the need for intensified outreach and engagement efforts to close the gap and maximize impact.
3	On track The annual progress largely aligned with the Plan of Results and Budget and Work Package theory of change. Four Inclusive Landscape Management Plans (Burundi, Ghana, Nigeria, and Rwanda) were co-designed, endorsed by local governments, and integrated with GESI-responsive strategies. All target countries successfully completed situational analyses, held multistakeholder dialogues, and spatially mapped Inclusive Land Management Plans. These plans addressed ecosystem resilience, gender inclusion, and sustainable resource governance. Some 400 stakeholders were engaged, including farmers, NGOs, and local governments; 1 intern and 4 Master's students were supported. WP3 met or exceeded most of its outcome indicators, with robust stakeholder engagement, policy endorsements, and innovation pilots.
4	On track Following WP4's theory of change, the activities conducted contributed to expected outputs toward achievement of the EOIOs. Results in 2023 contributed to the two outcomes of the WP4: WEIA was assessed in three countries (Outcome 4.1) and youth and women were engaged in agribusiness (Outcome 4.2). In total 22,701 value chain actors were e-registered and 5,660 surveyed for the baseline. Six gender-based and youth agricultural innovation platforms were strengthened in five countries and 2,257 youth and 2,943 women from agricultural value chains were trained in agricultural entrepreneurship, market access, and general skills in five countries (Côte d'Ivoire, DR Congo, Ghana, Nigeria, and Rwanda). Activities contributed directly to all outputs (OP4.1.1., OP4.1.2., OP4.1.3., OP4.2.2). The GEM system enabled women to gain an additional 140 kg of milled rice per ton of paddy, equivalent to USD 73. An iron-toxicity-tolerant variety of rice, named ARICA 6, enabled youth and women to increase their rice yields by 330 kg per ha and net incomes by USD 120 per ha.
5	On track The key results contributed to all 6 outputs in the theory of change for WP5. WP5 utilized evidence-based management solutions to drive impactful outcomes at scale in West and Central Africa. Through activities such as workshops, guideline development, and studies on consumer preferences, WP5 aimed to increase investment, foster collaboration, and promote adoption of agricultural innovations. By using tools like the Partnership Health Checkup Tool, the Initiative also strengthened partnerships and enhanced collaborations among stakeholders. Activities contributed directly to all 6 outputs (26,27,28,29,30,31) in the theory of change.

Definitions

On track

- Progress largely aligns with Plan of Results and Budget and Work Package theory of change.
- Can include small deviations/issues/delays/risks that do not jeopardize success of Work Package.

Delayed

- Progress slightly falls behind Plan of Results and Budget and Work Package theory of change in key areas.
- Deviations/issues/delays/risks could jeopardize success of Work Package if not managed appropriately.

Off track

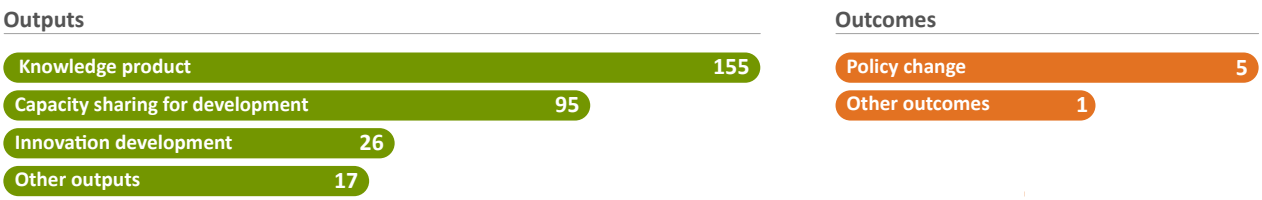
- Progress clearly falls behind Plan of Results and Budget and Work Package theory of change in most/all areas.
- Deviations/issues/delays/risks do jeopardize success of Work Package.

Section 4: **Quantitative overview of key results**

This section provides an overview of results reported and contributed to, by the CGIAR Initiative on Transforming AgriFood Systems in West and Central Africa from 2022 to 2024. These results align with the CGIAR Results Framework and Transforming AgriFood Systems in West and Central Africa's theory of change. Further information on these results is available through the CGIAR Results Dashboard.

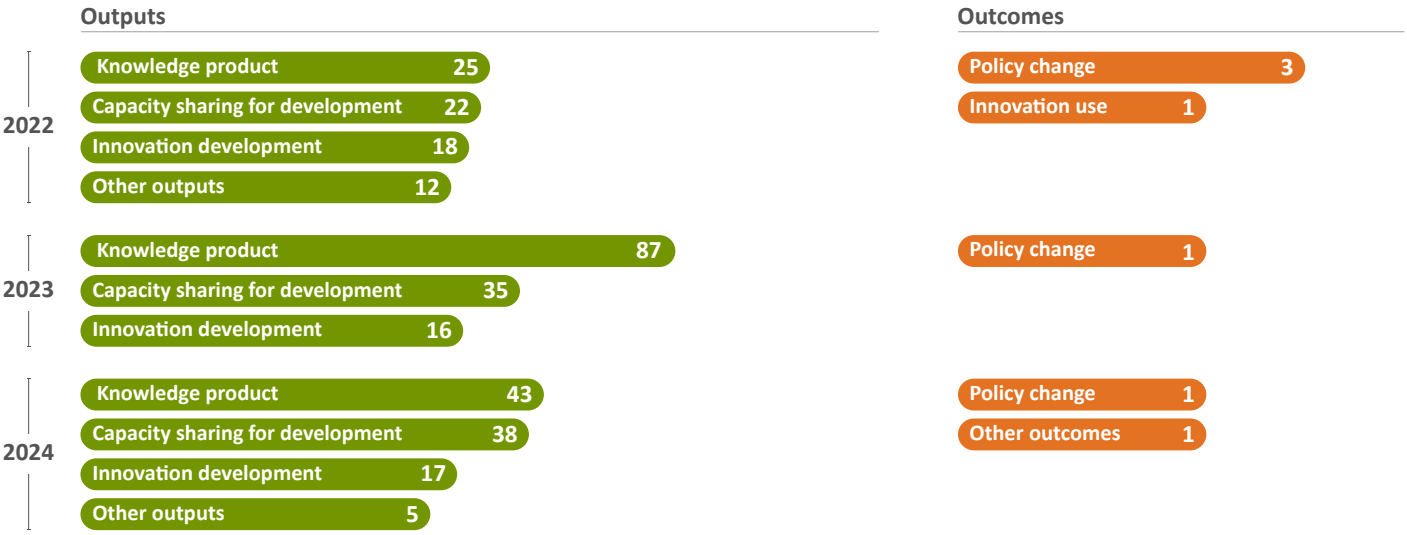
The data used to create the graphics in this section were sourced from the CGIAR Results Dashboard on 04 April 2025. These results are accurate as of this date and may differ from information in previous Technical Reports. Such differences may be due to data updates throughout the reporting year, revisions to previously reported results, or updates to the theory of change.

Overview of results by category



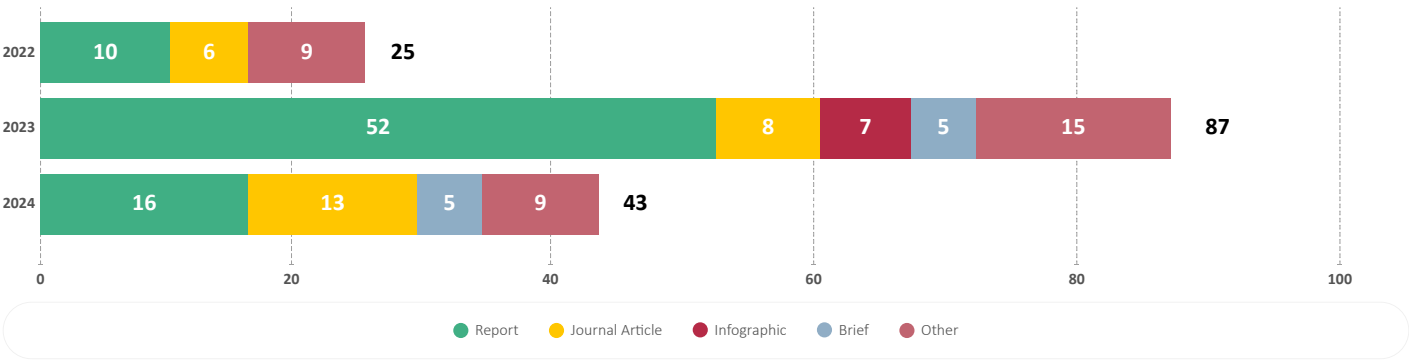
The Initiative reported 300 results over the period of 2022-2024 including 81, 140 and 104 results in 2022, 2023 and 2024, respectively. The total number of results per category reflects unique results reported between 2022 and 2024. Results reported in multiple years are only counted once.

Overview of results by category, year by year



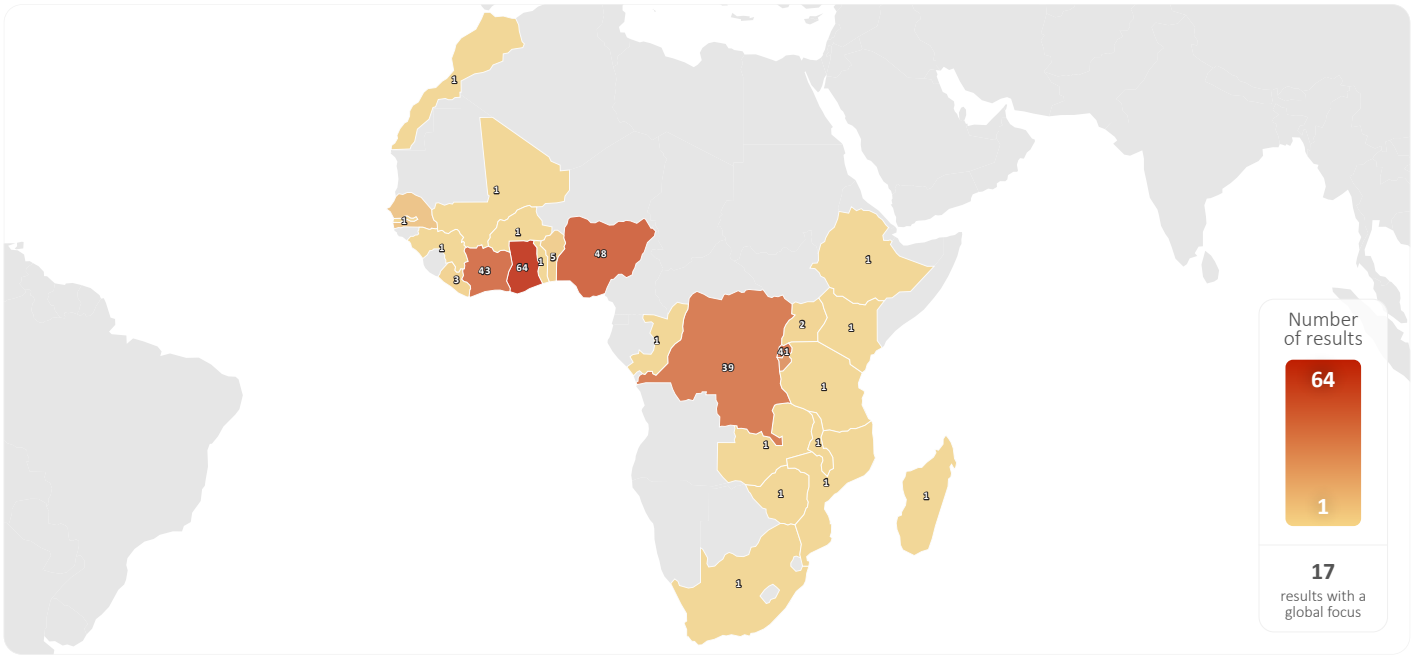
The graphs with yearly data include both new results reported for that specific year and updated results from previous years.

Knowledge products by typology

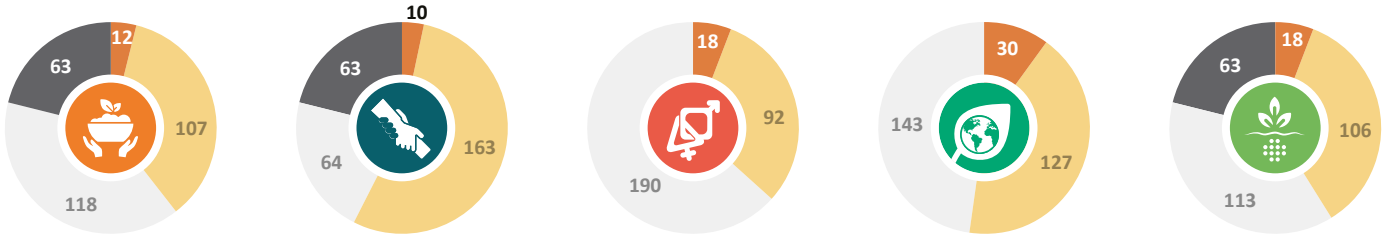


The Initiative contributed to 155 knowledge products, including 27 journal articles. The numbers of knowledge products developed by the Initiative were 25 in 2022, 87 in 2023, and 43 in 2024. The number of journal articles increased from 6 in 2022 to 8 in 2023 and to 13 in 2024.

Geographic focus of results (2022–2024)



Number of results by Impact Area contribution



Nutrition, health and food security 300

Poverty reduction, livelihoods and Jobs 300

Gender equality, youth and social inclusion 300

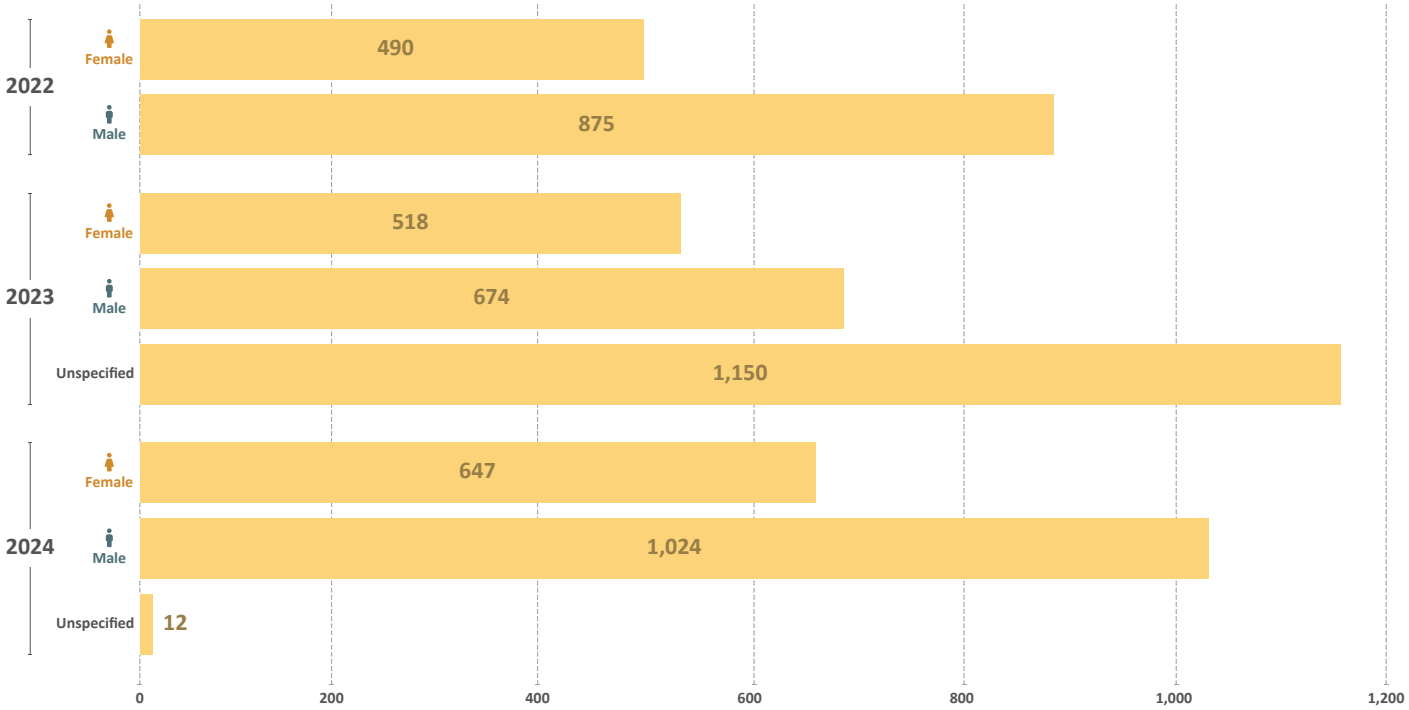
Climate adaptation and mitigation 300

Environmental health and biodiversity 300

- **2 = Principal:** Contributing to one or more aspects of the Impact Area is the principal objective of the result. The Impact Area is fundamental to the design of the activity leading to the result; the activity would not have been undertaken without this objective.
- **1 = Significant:** The result directly contributes to one or more aspects of the Impact Area. However, contributing to the Impact Area is not the principal objective of the result.
- **0 = Not targeted:** The result has been screened against the Impact Area, but it has not been found to directly contribute to any aspect of the Impact Area as it is outlined in the CGIAR 2030 Research and Innovation strategy.
- **Not applicable:** Pertains to 2022 reported results when only information on Gender and Climate impact area tagging was available.

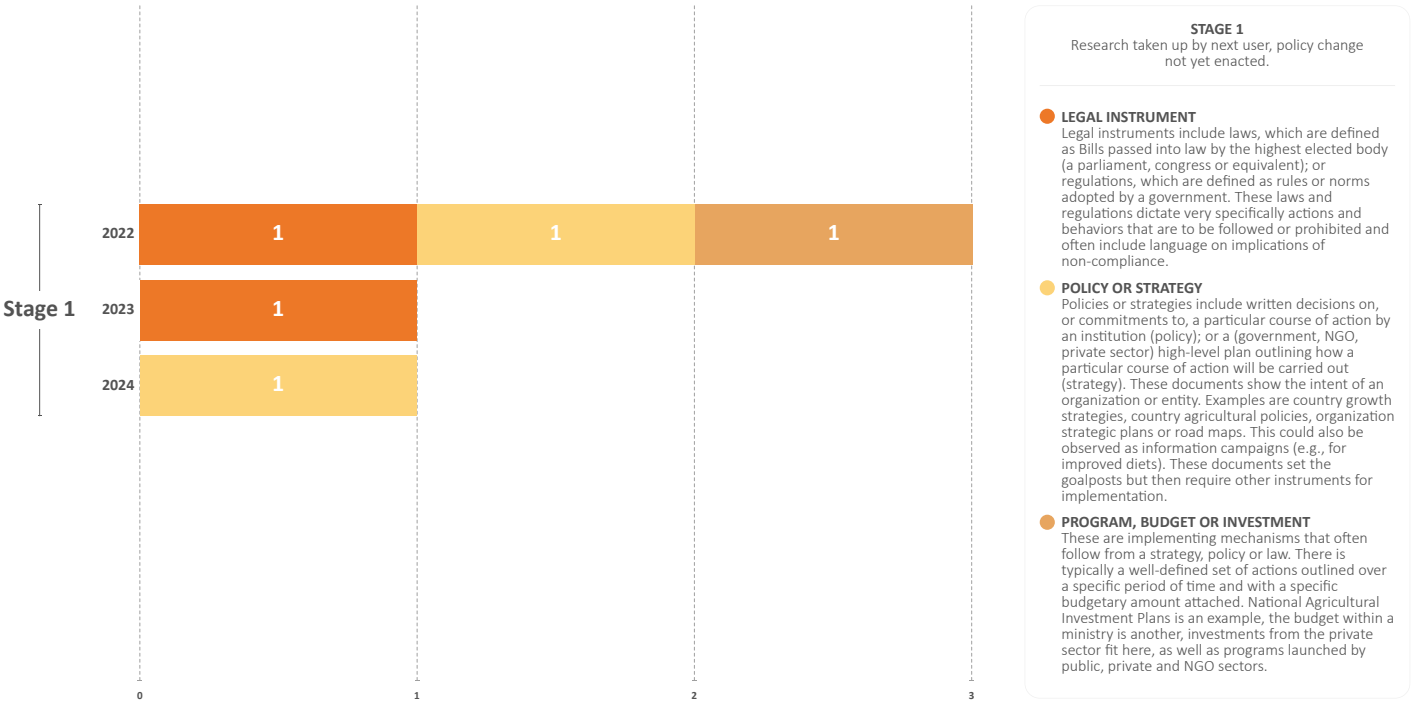
The results of the Initiative target all five Impact Areas of CGIAR, with the "Climate change adaptation and mitigation" and "Gender equality, youth and social inclusion" Impact Areas being significant in 127 and 92 results, respectively, while they are principal in 30 and 18 results, respectively. Similarly, the "Poverty reduction, livelihoods and jobs" and "Nutrition, health and food security" Impact Areas are significant in 163 and 107 of the Initiative's results, respectively, while they are principal in 10 and 12 results, respectively. Finally, 106 and 18 results contribute significantly and principally, respectively, to the "Environmental health and biodiversity" Impact Area.

Number of individuals trained by the initiative



In total, 95 capacity sharing events were organized by the Initiative, which benefited 5,390 actors, including 1,655 women (31 percent). In 2022, 1,365 persons, including 490 women (36 percent), were trained while 2,342 persons, including 518 women (22 percent) benefited from capacity strengthening activity in 2023. In 2024, the Initiative helped to train 1,683 people, including 647 women (38 percent). Capacity building activities were conducted along the value chains and were related to good agricultural practices, postharvest technologies, value chain improvement, and entrepreneurship and business development skills for youth and women. To improve the scaling readiness of the innovations, a workshop was organized in 2023 for technology Scaling Readiness in Rwanda.

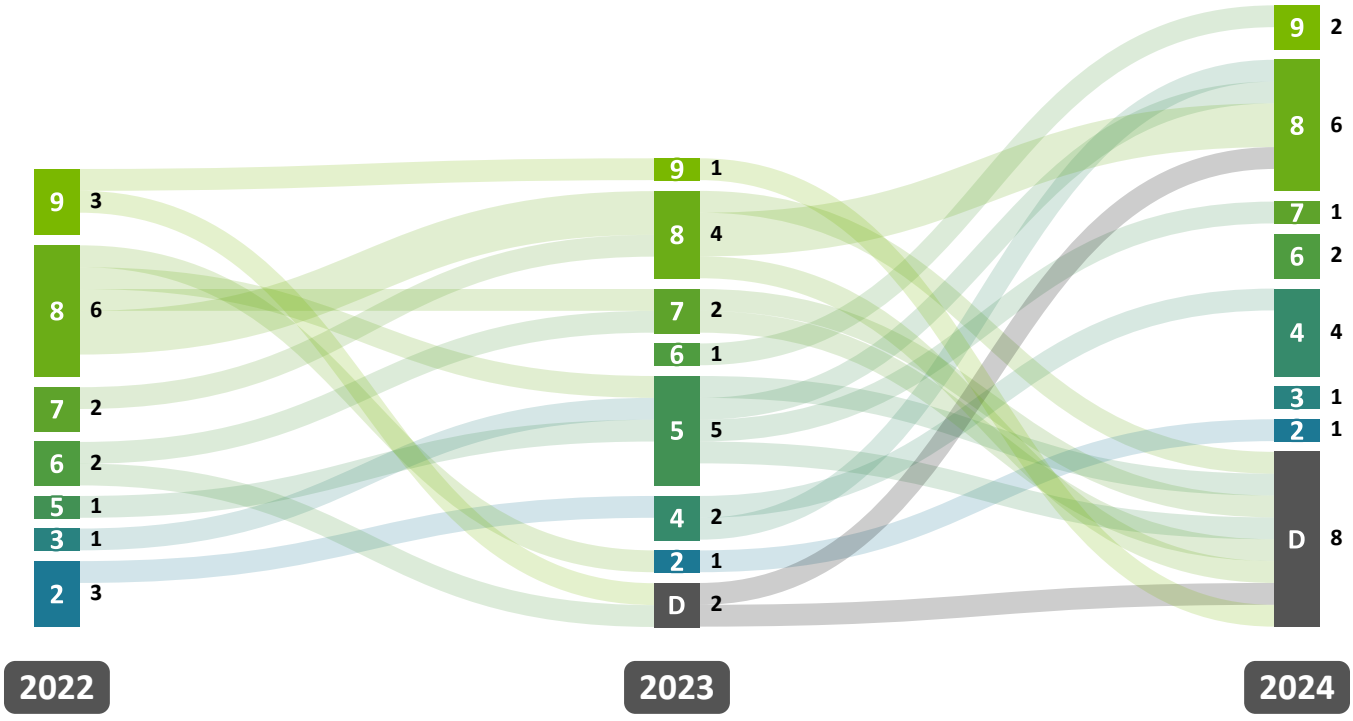
Policies by stage and by type



In terms of outcomes, the Initiative contributed to three policy changes in 2022, one in 2023, and one in 2024. In 2023, the policy change was related to improving policy, regulation, and practices in the seed sector in Rwanda. This result was reported by the Seed Equal Initiative with the contribution of this Initiative. The policy is at Stage 1 ("Research taken up by the next user, policy change not yet enacted").

Number of innovations and their readiness levels

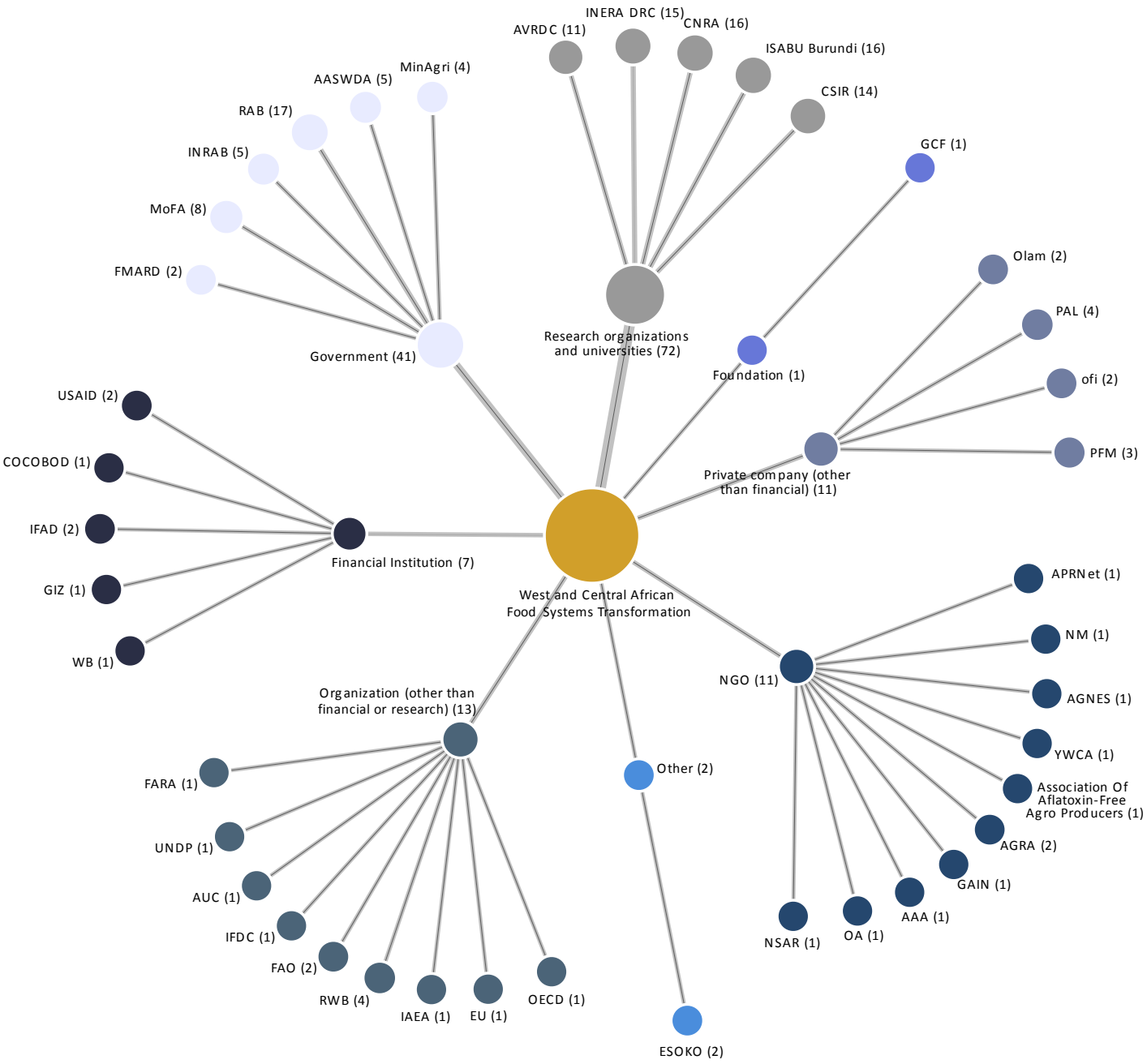
		Pipeline overview # of innovations
9	**Proven Innovation** The innovation is validated for its ability to achieve a specific impact under uncontrolled conditions	4
8	**Uncontrolled Testing** The innovation is being tested for its ability to achieve a specific impact under uncontrolled conditions	8
7	**Prototype** The innovation is validated for its ability to achieve a specific impact under semi-controlled conditions	3
6	**Semi-Controlled Testing** The innovation is being tested for its ability to achieve a specific impact under semi-controlled conditions	2
5	**Model/Early Prototype** The innovation is validated for its ability to achieve a specific impact under fully-controlled conditions	3
4	**Controlled Testing** The innovation is being tested for its ability to achieve a specific impact under fully-controlled conditions	4
3	**Proof of Concept** The innovation's key concepts have been validated for their ability to achieve a specific impact	1
2	**Formulation** The innovation's key concepts are being formulated or designed	1
1	**Basic Research** The innovation's basic principles are being researched for their ability to achieve a specific impact	0
0	**Idea** The innovation is at idea stage	0



9 Proven Innovation · 8 Uncontrolled Testing · 7 Prototype · 6 Semi-Controlled Testing · 5 Model/Early Prototype · 4 Controlled Testing · 3 Proof of Concept · 2 Formulation · 1 Basic Research · 0 Idea · D Discontinued

The Initiative also reported 26 innovations. As the Initiative focused more on the Scaling Readiness of innovations, 17 of the innovations reported were at least at a level of 6 out of 9 on the scaling readiness scale (Figure 1). Eight innovations were tested (uncontrolled testing) and were ready to go to the validation stage. Four innovations were already proven.

Transforming AgriFood Systems in West and Central Africa's external partners



This diagram maps the key external partners of the West and Central African Food Systems Transformation Initiative organized by partner type. The numbers in brackets represent the number of results each partner has contributed to, reflecting the scale and diversity of collaborations. To allow for a clearer view, a maximum threshold of six partners was applied for each typology. The list of partner acronyms is available here.

Partnerships and Transforming AgriFood Systems in West and Central Africa's impact pathways

Building on the partnership workshop held at the beginning of the Initiative in 2022, the Initiative organized a partner every year. In 2023, the Initiative organized a pause, reflect, and a partnership workshop in Accra, Ghana, 9–12 May 2023, the 140 results the Initiative reported in 2023 include 17 innovation partners, 5 scaling partners and 3 demand partners. In 2024, an Annual and Wrap-Up Workshop for the Initiative was held 29 October–1 November in Abuja, Nigeria. This workshop marked the culmination of three impactful and partnership years focused on improving nutrition, income, and food security in the region through climate-resilient, market-driven agrifood systems and the empowerment of youth and women. This wrap-up workshop brought together 60 key partners to reflect on their achievements, to share insights, and to plan the way forward under CGIAR's new Portfolio for 2025–2030.

The results of this Initiative were jointly produced by many partners, including research organizations and universities (e.g. the National Agricultural Research Center in Côte d'Ivoire, the National Institute

for Agronomic Study in DR Congo, Wageningen University and Research in the Netherlands), government institutions (e.g. the Ministry of Agriculture in Ghana), private companies (e.g. Atafi Agro Merchandise Services Ltd and Olam in Nigeria), NGOs (e.g. Association of Aflatoxin Free Producers) and financial institutions) (Figure 3).

The 141 results the Initiative reported in 2023 include 56 innovation partners, 29 scaling partners, and 14 demand partners. In particular, 49 results were co-produced with national research organizations and universities. In-country activities were jointly implemented with ARES in the six target countries of the Initiative. Between 2022 and 2024, implementation sub-contracts were signed with NARES in the six target countries, including the Council for Scientific and Industrial Research in Ghana, the Centre National de Recherche Agronomique in Côte d'Ivoire, and the National Cereals Research Institute in Nigeria. To coordinate and develop tools and methods to strengthen partnership, a collaboration was initiated with CORAF as a regional organization. Partnerships with non-CGIAR international institutions included improving vegetable production with the World Vegetable Centre, developing decision-support tools for fertilizer recommendations in Burundi with the International Fertilizer Development Centre, and developing an Early Warning System for fall armyworm and Striga management in Rwanda with icipe.

Value Addition and Business Strengthening Training in Togo.
Credit: IITA

Transforming AgriFood Systems in West and Central Africa's internal network of collaborations

This diagram presents the internal collaborations of the West and Central African Food Systems Transformation Initiative with other CGIAR Initiatives. Connections are sized according to the number of shared reported results. A results threshold filter is applied (set to a minimum of three results) to focus the view on the most significant collaborations. Thicker lines represent stronger collaborative links based on a higher number of shared results.

Portfolio linkages and Transforming AgriFood Systems in West and Central Africa's impact pathways

Between 2022 and 2024, the West and Central African Food Systems Transformation Initiative increased its collaboration with other CGIAR Initiatives. During the pause, reflect and stakeholder workshop organized by the Initiative in May 2023 and the Annual and Wrap-Up Workshop of the Initiative held in November 2024, dedicated sessions were organized to discuss collaboration with other CGIAR Initiatives. The Initiative has designated focal persons for seven other Initiatives (Digital Innovation, Excellence in Agronomy for Sustainable Intensification and Climate Change Adaptation (Excellence in Agronomy), Plant Health and Rapid Response to Protect Food Security and Livelihoods (Plant Health), Diversification in East and Southern Africa (Ukama Ustawi), Seed Equal, Market intelligence and Harnessing Gender and Social Equality for Resilience in Agrifood Systems (Gender Initiative).

This West and Central African Food Systems Transformation Initiative collaborated with CGIAR's three Action Areas. In the Systems Transformation Action Area, this Initiative collaborated with the Digital Innovation and the Building Systemic Resilience Against Climate Variability and Extremes Initiatives to work on digital tools to deliver climate information to increase the resilience of smallholder farmers to climate change. This Initiative also collaborated with those two Initiatives to co-develop a decision-support tool for monitoring rice area, yield, and climate change impacts on rice production in Côte d'Ivoire. This Initiative's collaboration with the Resilient Agrifood Systems Action Area was done mainly with the Excellency in Agronomy, Plant Health, and Ukama Ustawi Initiatives to test agronomic practices. In the Genetic Innovation Action Area, the Initiative's collaboration was conducted with the Seed Equal and Market intelligence Initiatives to test early seed generation and assess farmers demand for seed of hybrid rice varieties, respectively. As a result, the Initiative jointly reported a policy change improving policy, regulation, and practices in Rwanda's seed sector.

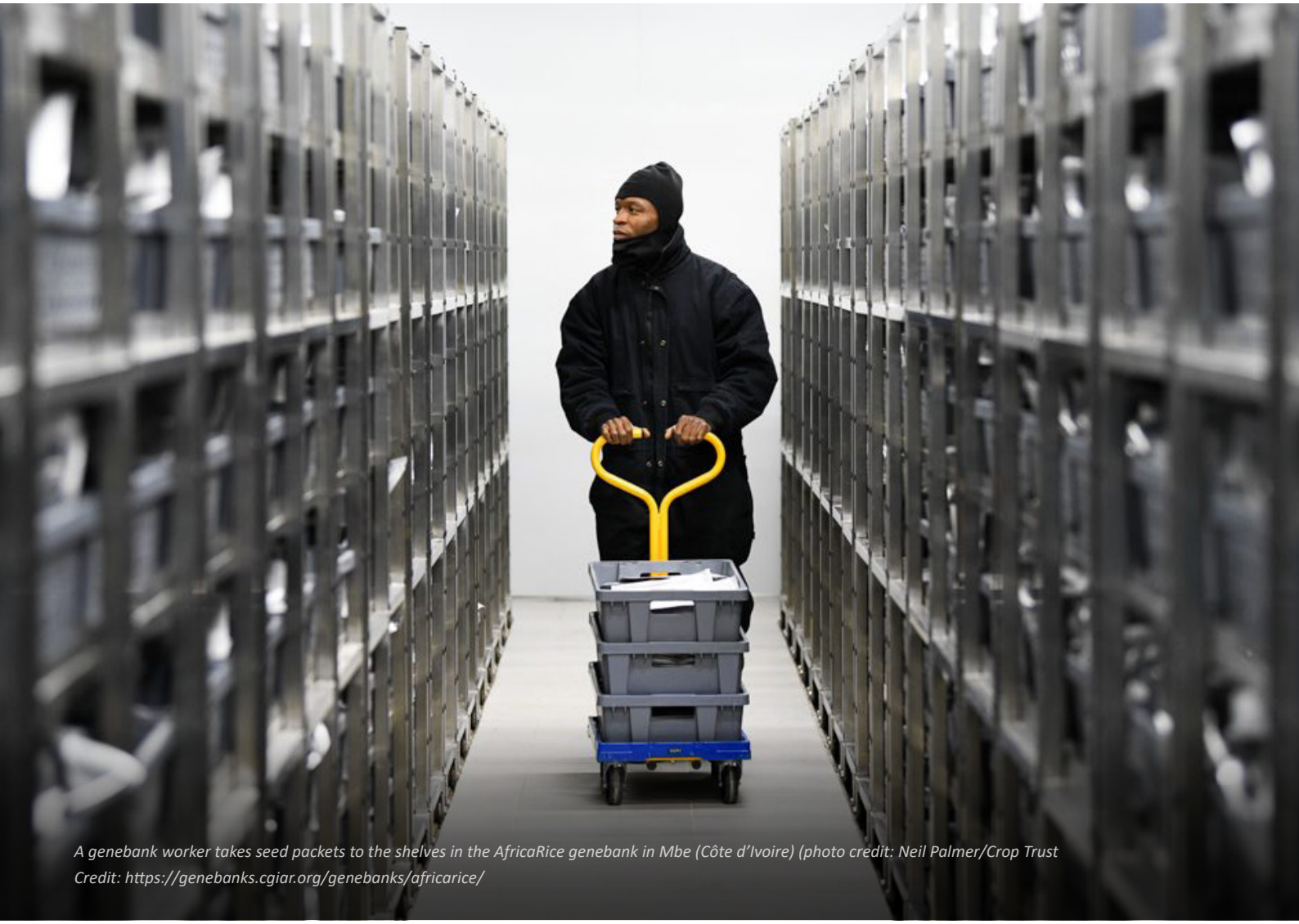
This Initiative has reported jointly at least 75 results with other Initiatives (Figure 3). The highest number of results (20) were reported with the Excellency in Agronomy Initiative while 8 and 10 results were reported jointly with the Ukama Ustawi and Climate Resilience Initiatives, respectively. In addition, 6 results were reported jointly with the Market Intelligence and Livestock, Climate and System Resilience Initiatives.

Photo of the plenary session of the partnership workshop.
Credit: AfricaRice

Section 7: **Key result story**

Genebank resources and climate-smart varieties are improving farmers' income and resilience

Farmers highly value having access to African rice landraces from CGIAR's Genebanks; ARICA 6, an iron-toxicity-tolerant variety increased their rice yields by 330 kg per ha and net incomes by USD 120 per ha.



A genebank worker takes seed packets to the shelves in the AfricaRice genebank in Mbe (Côte d'Ivoire) (photo credit: Neil Palmer/Crop Trust Credit: https://genebanks.cgiar.org/genebanks/africarice/

Primary Impact Area

Other relevant Impact Areas targeted

Contributing Initiative

West and Central food system transformation

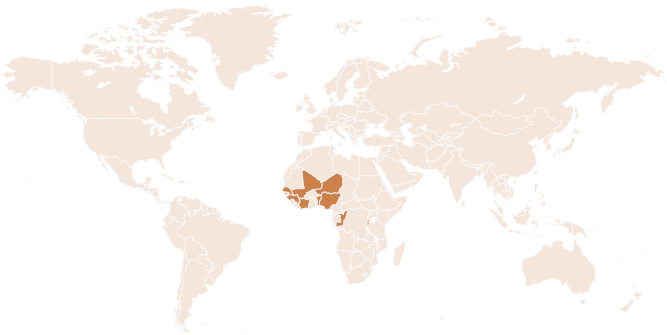
Contributing Centers

AfricaRice

Contributing external partners

National Agricultural Research Institute of Benin (INRAB)

Geographic scope



Regions: West, Central and East Africa

Countries: Guinea Conakry · Côte d'Ivoire · Benin · Niger · Nigeria · Rwanda · Burundi · DR Congo · Mali · Senegal

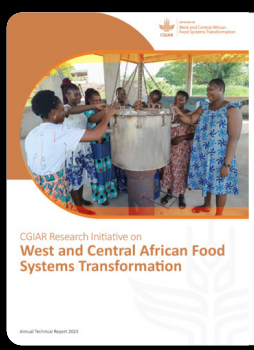
While genebanks are viewed mainly as providers of valuable traits for crop breeders, we found that farmers highly value having access to African rice landraces and that those farmers who grow landrace seed are willing to pay more than those who do not. Related to assessing CGIAR's Genebanks contribution to improved varieties, we assessed the impact of ARICA 6, a variety of African rice tolerant of iron toxicity in Guinea. The results showed that the use of ARICA 6 increased rice yields by 330 kg per ha and net incomes by USD 120 per ha.

While genebanks are seen mainly as providers of valuable traits for crop breeders, we demonstrate that these repositories of diverse crop genetic material, which represent society's agricultural heritage, are highly valued also by farmers. In a field experiment, we investigated how randomized exposure to, and experimentation with, small amounts of African rice landrace seed or seed of advanced rice varieties developed by AfricaRice affected how smallholder rice farmers value these novel genetic resources. We found that farmers value having access to African rice landraces and that those farmers who grow landrace seed are willing to pay more for those seed than those who did not. Our results demonstrate the additional value provided by the conservation of African rice landrace varieties and highlight the importance of experimentation in the adoption process. We assessed the impact of ARICA 6, a rice variety tolerant of iron toxicity, on different incomes. Two rounds of data were collected from 520 rice-farming households in Guinea. The results showed that use of ARICA 6 increased rice yields by 330 kg per ha and net incomes by USD 120 per ha. Our results also indicated that the new variety may crowd in significant investments where irrigation systems relax the constraint of unpredictable rainfall. Access to irrigation increases the investment in total fertilizers by USD 99 per ha.

> I like to test a traditional variety (landrace) of African rice (Oryza glaberrima), which was domesticated originally in Africa several thousand years ago and could prove better adapted to local conditions.
>
> Anonymous farmer from the northern part of Côte d'Ivoire

2022 key result story

An experimental approach to farmer valuation of African rice genetic resources (ID 20104)



2023 key result story

Does Adoption of Improved Variety Encourage Farmers to Invest in Modern Inputs and Use Good Practices? Evidence from Rice Farmers in Guinea

CGIAR

INITIATIVE ON

West and Central African
Food Systems Transformation

Association of farmers representative visit diversification experiement of the Initiative.

Credit: AfricaRice