



CGIAR Research Initiative on **Seed Equal**



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Disclaimers

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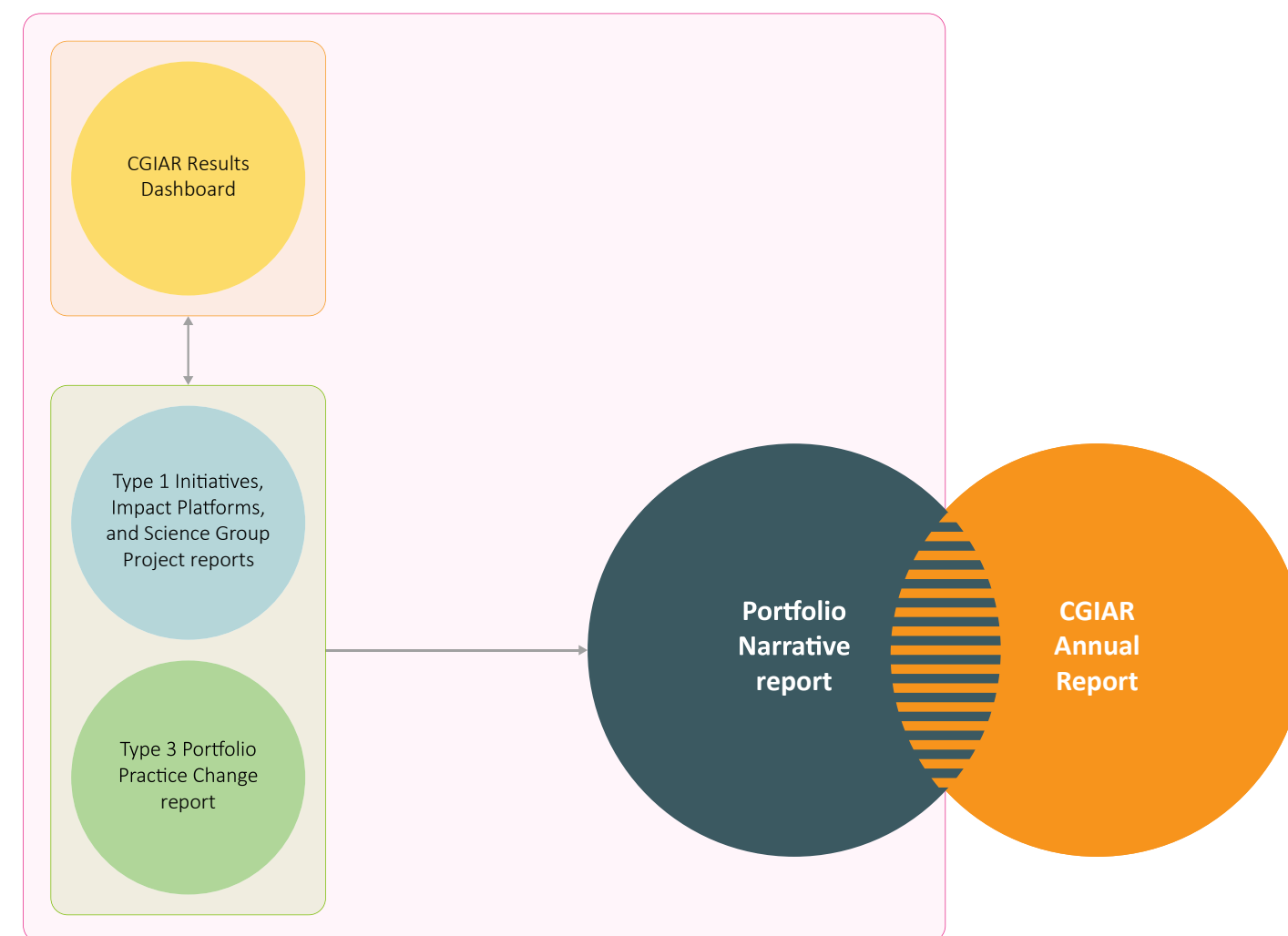
CGIAR Technical Reporting 2023

CGIAR Technical Reporting has been developed in alignment with the [CGIAR Technical Reporting Arrangement](#). This Initiative report (“Type 1” report) constitutes part of the broader [CGIAR Technical Report](#). Each CGIAR Research Initiative submits an annual “Type 1” report, which provides assurance on Initiative-level progress towards End of Initiative outcomes.

The [CGIAR Technical Report](#) comprises:

- Type 1 Initiative, Impact Platform, and Science Group Project (SGP) reports, with quality assured results reported by Initiatives, Platforms and SGPs available on the CGIAR Results Dashboard.
- The Type 3 Portfolio Performance and Project Coordination Practice Change report, which focuses on internal practice change.
- The Portfolio Narrative, which draws on the Type 1 and Type 3 reports, and the CGIAR Results Dashboard, to provide a broader view on Portfolio coherence, including results, partnerships, country and regional engagement, and synergies among the Portfolio’s constituent parts.

The CGIAR Annual Report is a comprehensive overview of CGIAR’s collective achievements, impact and strategic outlook, which draws significantly from the Technical Report products above. For 2023, the Annual Report and Technical Report will be presented online as an integrated product.



Section 1: Fact sheet and budget

Initiative name	Seed Equal
Initiative short name	Seed Equal
Initiative Lead	Christopher Ojiewo (c.o.ojiewo@cgiar.org)
Initiative Co-lead	David Spielman (d.spielman@cgiar.org)
Science Group	Genetic Innovation
Start – end date	01/01/2024 – 31/12/2024
Geographic scope	<p>Regions Central and West Asia and North Africa · Eastern and Southern Africa · Latin America and the Caribbean · South Asia · Southeast Asia and the Pacific · West and Central Africa</p> <p>Countries Argentina · Bangladesh · Bolivia (Plurinational State of) · Brazil · Burkina Faso · Colombia · Costa Rica · Ecuador · El Salvador · Ethiopia · Ghana · Guyana · Honduras · India · Indonesia · Kenya · Lao People's Democratic Republic · Malawi · Mali · Mexico · Mozambique · Myanmar · Nepal · Nicaragua · Nigeria · Pakistan · Panama · Paraguay · Peru · Rwanda · South Africa · United Republic of Tanzania · Viet Nam · Uganda · Uruguay · Venezuela (Bolivarian Republic of) · Zambia · Zimbabwe · Egypt · Lebanon · Morocco · Sudan · Uzbekistan</p>
OECD DAC Climate marker adaptation score¹	Score 2: Principal The activity is principally about meeting any of the three CGIAR climate-related strategy objectives—namely, climate mitigation, climate adaptation and climate policy—and would not have been undertaken without this objective.
OECD DAC Climate marker mitigation score¹	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 Gender equity marker score²	Score 1B: Gender responsive On the top of the minimum requirements for 1A, the Initiative/project includes at least one explicit gender equality outcome, and the Initiative/project team has resident gender expertise or capacity. The Initiative/project includes indicators and monitors participation and differential benefits of diverse men and women.
Website link	https://www.cgiar.org/initiative/06-seedqual-delivering-genetic-gains-in-farmers-fields/

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 Research Initiative on Seed Equal seeks to accelerate the delivery of genetic gain in farmers' fields. Its work draws on decades of prior CGIAR efforts to build strong and durable partnerships and networks with public agricultural research and extension systems, private companies, farmer-based organizations, women's organizations, and civil society in the global South.

Seed Equal's work focuses primarily on the farmer-facing end of the seed value chain, and explicitly facilitates the movement of products—designed by the Market Intelligence Initiative, advanced by the Accelerated Breeding Initiative, and developed with national agricultural research systems (NARS)—to seed sector actors. These actors include, but are not limited to, private seed companies, state-owned seed production units, community-based seed producers, seed entrepreneurs, and women farmers' organizations. Seed Equal plays a facilitative and synergistic role through work on actionable research, capacity sharing, and outreach. Seed Equal's achievements in 2023 are highlighted by three important results.

First, the Initiative has made significant progress in sharing capacity with national innovation and scaling partners. These are the organizations, companies, and entrepreneurs that multiply, deliver, and promote the uptake of quality seed of improved varieties for the Initiative's three main crop archetypes (cereals; legumes; and roots, tubers, and bananas). Partners report significant gains in their capacity to produce and supply quality seed in response to demand, while also benefiting from efforts to channel new resources to their operations, introduce innovative scaling models, and develop stronger organizational capabilities.

Second, Seed Equal has made concerted and proactive efforts to prioritize an inclusive, gender-transformative agenda for seed sector development. Through its capacity-sharing, research, and outreach activities, Seed Equal has moved beyond a strategy of including women as participants to a more gender-transformative approach to integrating youth and women's decision-making power in seed production, marketing, and use. This is highlighted by the mainstreaming of gender across all Work Package (WP) activities, the content of seed system learning/training events conducted in the Initiative's focal countries, and the depth and magnitude of applied, actionable research on gender and seed systems.

Third, Seed Equal has made significant progress in shifting national and global discourse on seed sector development to a data-driven, evidence-based discussion. This work has focused on seed sector development with an emphasis on spotlighting essential indicators and metrics for monitoring, conducting deep analysis of legal and regulatory gaps at the country level, and connecting global partners—the Africa Union, World Food Programme (WFP), and International Seed Federation (ISF), among many others—to engender action on regional and national priorities.

As a result of progress in these three areas, Seed Equal is positioning CGIAR as the go-to partner to move market-intelligent products from global and regional breeding programs to national research and scaling partners at multiple levels of operation. With these achievements, Seed Equal is now accelerating the pace at which CGIAR is contributing to a demand-driven, partnership-based agenda that will deliver quality seed of climate-resilient, nutritious, and market-preferred varieties to farmers' fields in the global South.

	2022	2023	2024
PROPOSAL BUDGET ▶	\$22.73M	\$23.89M	\$25.38M
APPROVED BUDGET ¹ ▶	\$10.14M	\$10.73M ²	\$8.62M ³

¹ The approved budget amounts correspond to the figures available for public access through the [Financing dashboard](#).

² This amount includes carry-over and commitments.

³ This amount is an estimation of the 2024 annual budget allocation, as of the end of March 2024.

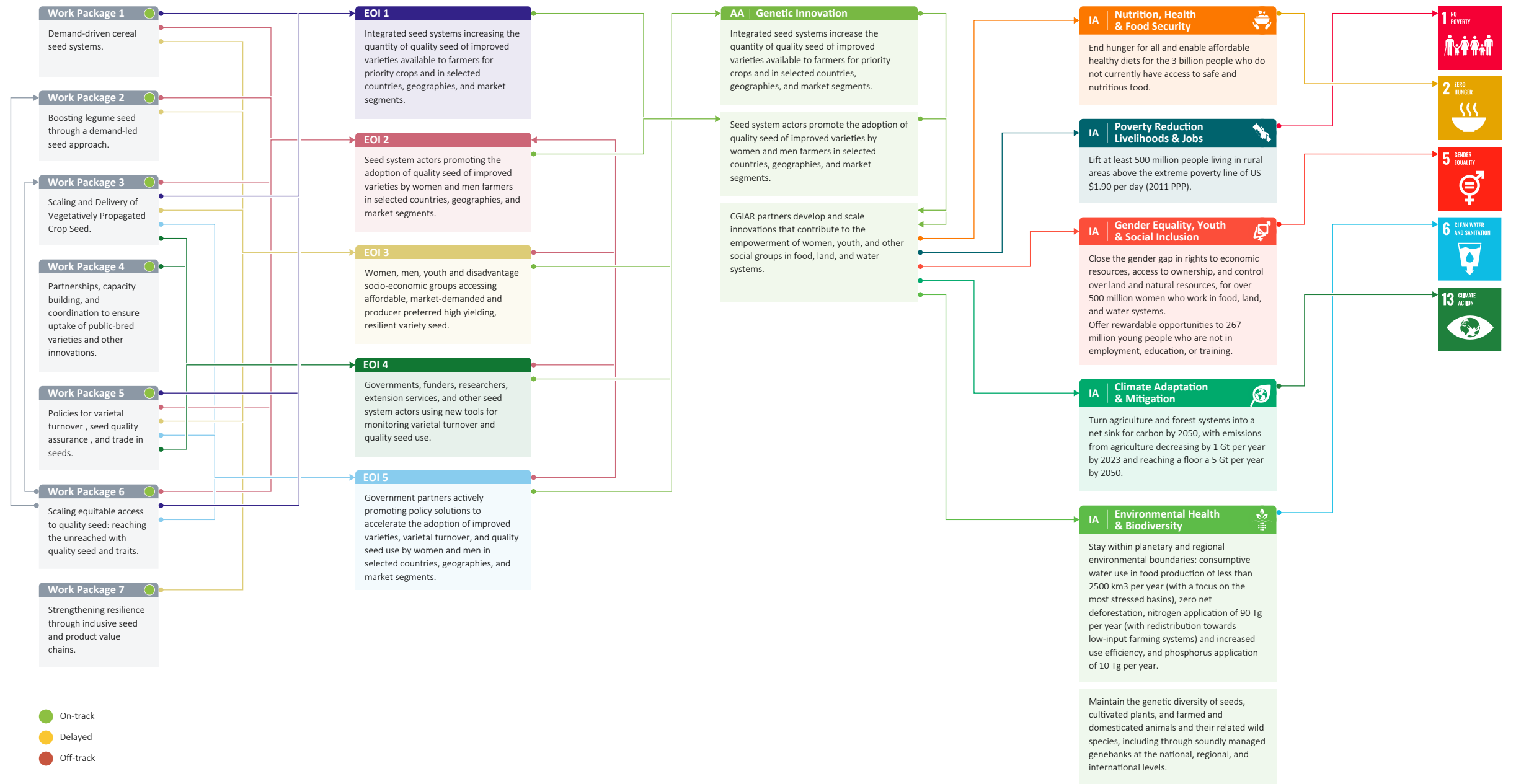


A on-farm trial led by a woman host farmer in Bangladesh. Credit: Swati Nayak (IRRI)

Section 2: Progress on science and 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.



EOI | End of Initiative outcome
 AA | Action Area
 IA | Impact Area
 SDG | Sustainable Development Goal

Note: A summary of Work Package progress ratings is provided in Section 3.



Transportation of sweetpotato seed vines on a donkey-drawn cart, Namonge, Geita, Tanzania. Credit: Kwame Ogero

Summary of progress against the theory of change

Seed Equal has progressed along its theory of change (TOC) in 2023 by (1) investing in and emphasizing capacity sharing with national innovation and scaling partners, (2) generating new evidence on strategies to accelerate inclusive seed sector development, and (3) proactively supporting scaling partners in the public, private, and civil society sectors. Partners reported significant gains in their capacity to produce and distribute quality seed of improved varieties to farmers, while also benefiting from improvements to their enabling environments, highlighted by new resources, better regulations, innovative scaling models, and stronger organizational capabilities.

Highlights include extensive progress on developing demand-led partnership platforms across Seed Equal's three main crop archetypes to directly support women and men seed producers

and producer organizations in the seed production, delivery, and marketing domains, and connect them with the expertise and resources available in national agricultural research and extension systems (NARES), private industry, civil society, and CGIAR.

Seed Equal also made concerted efforts to ensure that its capacity sharing, research, and outreach are advancing from a nominal focus on gender and inclusion to a more proactive strategy and approach, ensuring that its contribution to CGIAR's Impact Areas are fundamentally transformative in nature. Seed Equal has played a vital role in connecting stakeholders, funders, and seed industry partners with the work of CGIAR to highlight the urgent need to measure and accelerate progress in delivering genetic gain to farmers' fields in the global South.

Progress by End of Initiative outcome

EOIO 1: Integrated seed systems increasing the quantity of quality seed of improved varieties available to farmers for priority crops and in selected countries, geographies, and market segments.

In 2023, **WP1** emphasized forming strategic partnerships to multiply quality seed of selected varieties for commercialization, focusing on open-pollinated varieties (OPV) such as wheat, rice, and OPV maize. We worked to decentralize seed production by creating partnerships in South Asia, Latin America, and sub-Saharan Africa, involving formal seed providers and informal and semiformal farmer groups. These efforts included capacity-building events targeting women growers to facilitate decentralized and equitable seed access in regions with slow market access and limited seed retailers. Training of Trainers (ToT) sessions aimed at boosting quality seed production of improved varieties, showing positive trends in early-generation seed (EGS) multiplication, seed sales, and indent data.

WP2 utilized a demand-led approach to expedite the adoption and turnover of new bean, cowpea, and soybean varieties across multiple African countries. This strategy enabled stakeholders to sustainably produce and distribute seeds, leveraging multistakeholder platforms (MSPs) for promoting varieties, establishing business links, attracting investments, and introducing new technologies. Extension services played a key role in spreading knowledge on legume cultivation and management, supporting seed production through field inspections, demonstrations, and field days.

WP3 collaborated with NARS partners to develop gender-responsive tools to prepare varietal profiles and understand seasonal demand for vegetatively propagated crop (VPC) seed in Nigeria, Tanzania, and Uganda. In Tanzania, we developed a spatial seed demand model for cassava systems and trained NARS partners in demand measurement techniques. Experimental auctions were conducted to assess farmers' willingness to pay for quality seed attributes. Ugandan NARS partners used mixed methods to analyze gender dynamics and understand seed preferences and acquisition, with a focus on sweet potato, cassava, and banana.

WP5 advanced policy and regulatory reforms to boost investment in quality seeds in six countries, focusing on regulatory changes for vegetative materials in Kenya; legal system analysis in Uganda; private sector involvement in Ethiopia, India, and Rwanda; and seed quality assurance improvements in Nigeria. The work included research and outreach to explore how seed sector innovations affect productivity and inclusion, such as launching an information platform for Ugandan seed dealers and expanding Ethiopia's direct seed marketing.

Through collaboration with the Centre for Sustainable Agriculture (CSA), Pragati, Access Livelihood Foundation (ALF), and the Centre for Behaviour Change and Communication (CBCC), **WP6** implemented gender-responsive strategies to boost women's involvement in seed production, providing EGS to women and marginalized groups, fostering a decentralized seed system, and improving access to quality seeds. This involved research with national and local partners to evaluate how formal and informal seed systems collaborate to offer quality seeds to women, youth, and marginalized farmers, with a focus on studies in Odisha and across India on seed villages, pulse systems, community banks, and seed information.

WP7 focused on enhancing seed systems for biofortified crops such as orange-fleshed sweet potato (OFSP) and iron-rich beans in support of WFP's Home-Grown School Feeding programs (HGSF) in Malawi, Tanzania, and Uganda. Working with WFP and NARS, Seed Equal promoted local cultivation and procurement for these programs. Activities included engaging community groups, offering subsidized foundation seeds, training on seed production for HGSF programs, and providing business support. Similar efforts were made in Malawi and Tanzania, aiming to integrate these biofortified crops into the HGSF initiative.



Cassava: Seed Equal has worked to improve understanding of seed demand to support the community-based enterprises of women and men seed entrepreneurs in Tanzania. Credit: James Legg, IITA

EOIO 2: Women, men, youth, and disadvantaged socioeconomic groups accessing affordable, market-led and producer-preferred, high-yielding, resilient seed varieties.

WP1 focused on enhancing the capabilities of national and subnational organizations in extension, seed delivery, and marketing to promote new and improved seed varieties. This effort engaged thousands of stakeholders across South Asia, Latin America, and sub-Saharan Africa through farmer field days, varietal selection, and quality assessments. Additionally, 100 formal producers were trained and involved in efforts to multiply, distribute, and market EGS and certified seeds.

WP2's efforts to leverage the demand-led seed system (DLSS) model and the Improving Bean Production and Markets in Africa strategy significantly improved seed access and gender parity in seed production across 12 African countries. Year-over-year, certified seed production increased by 128 percent for soybeans, 118 percent for cowpeas, and 15 percent for common beans, with most varieties less than 10 years old. This growth stemmed from demand strategies by grain off-takers, leading to variety prioritization, new production frameworks, and enhanced capacity building. These strategies were successfully spread across legume crops and countries, boosting the Initiative's overall impact.

In **WP3**, the promotion of quality VPC seed derived from breeding programs was enhanced by the development of a systematic planning tool for NARS, which also provided feedback to breeders. Case studies were conducted to highlight profitable inclusive VPC businesses; these showcased positive returns on investment in potato seed production in Malawi.

WP5 shared new collaborative research in Uganda that highlights the gendered dimensions of providing information to women and men co-heads of households related to maize varieties/hybrids, inputs, and management practices. Findings provided new insights and actionable evidence for policymakers, the national research system, and extension providers on increasing reach, benefits, empowerment, and transformation for women in agriculture.

WP6 enhanced women and youth's engagement in seed production and marketing in Cameroon, India, and Uganda, emphasizing research on seed credit models for women's empowerment. In India, partnerships with local organizations led to the creation or support of 16 farmer producer companies (FPCs), involving more than 500 women in seed production. In addition, 14 farmer producer organizations (FPOs) in Odisha expanded seed production across six paddy varieties, benefiting from training in seed production, certification, and marketing under IRRI's Farmer Field and Business School model. Value chain analyses for agricultural commodities in Odisha were also conducted to explore seed business opportunities.

WP7 implemented activities in Karamoja subregion in Uganda and five districts in Malawi. Because OFSP was relatively new in most of Karamoja's project implementation communities, WP7 researchers studied the potential yields of sweet potato in these communities. A school meal program aiming to ensure consistent consumption was undertaken between CIP, WFP, and partner Andre Food International in four districts in Karamoja, with two schools selected per district. OFSP assessments indicated an average yield of 8.4MT/ha, much higher than the national average of 4.8MT/ha.

EOIO 3: Seed system actors promoting uptake of quality seed of improved varieties by women and men farmers in selected countries, geographies, and market segments.

WP1 collaborated with approximately 100 seed producers across South Asia, Latin America, and sub-Saharan Africa to produce and deliver 5,500 MT of quality seeds, and engage more than 50,000 stakeholders through 700 demonstrations and various awareness programs. Training on quality seed production aimed at self-sufficiency in product introduction and commercialization.

WP3 developed tools and studies to optimize cassava seed systems, including the weighted average varietal age (WAVA) metric and a seed requirement estimation tool for national seed demand analysis. We also introduced new technologies such as the cassava rapid stem multiplication tunnel and seed potato rooted apical cuttings to enhance EGS production efficiency and affordability, alongside a study on institutional arrangements for cassava EGS in Southeast Asia.

WP5's collaboration with policymakers, the private sector, and farmer organizations in six countries (Ethiopia, India, Kenya, Nigeria, Rwanda, Uganda) enhanced seed sector development, focusing on regulatory and investment improvements. Efforts included addressing market entry barriers, partnering with think tanks and research bodies, and working with entities like AGRA and the Africa Union for broader sector impact.

WP6, in partnership with CSA, Pragati, ALF, and CBCC, implemented gender-responsive strategies to boost women's roles in seed production, providing EGS to marginalized groups to foster a decentralized seed system and improve access to quality seeds. This involved studies on how different seed systems support access for women and smallholder farmers.

EOIO 4: Government partners actively promoting policy solutions to accelerate the adoption of improved varieties, varietal turnover, and quality seed use by women and men in selected countries, geographies, and market segments.

WP2 collaborated with governments to enhance seed variety prioritization and market creation, leading to the promotion of new and biofortified bean varieties across Ethiopia, Ghana, Kenya, Mozambique, Nigeria, Rwanda, and Zambia. These partnerships have successfully influenced government extension models and support programs, facilitating the introduction and adoption of nutrient-rich bean and cowpea varieties, aimed at addressing nutritional needs and boosting agricultural productivity.

WP3 engaged with government partners to advocate for policy changes that speed up the adoption of quality seeds, including the development of seed standards in Kenya, seed certification procedures in Ghana, and self-certification in Tanzania. This aims to streamline varietal turnover and ensure the availability of quality seeds to farmers.

WP5 achieved significant milestones in policy and regulatory reforms across six target countries, serving as a critical platform for engaging a wide range of stakeholders in seed policy reform. Efforts focused on ensuring reforms were evidence-based and practical; this work included the development of licensing guides and model agreements to facilitate better management and negotiation of seed production and distribution, contributing to improved varietal turnover, seed quality, and trade.

WP6 partnered with The African Seed Access Index (TASAI) to review and develop new metrics for measuring inclusive seed access, aiming to implement these metrics in Uganda. This strategic collaboration seeks to enhance understanding and tracking of seed access, particularly for marginalized groups, to promote broader and more equitable participation in seed markets.

EOIO 5: Governments, funders, researchers, extension services, and other seed system actors using new tools for monitoring varietal turnover and quality seed use.

WP2 advocated for Seed Equal partners, including researchers and extension services, to use Open Data Kit for gathering data on legume seed production and marketing, aiding in the accurate forecasting of demand and supply to enhance varietal adoption and turnover across Africa.

WP3 harnessed the RTB Tools4SeedSystems Toolbox to track key seed system metrics, showcasing the toolbox's application in a workshop attended by participants from various countries and organizations, which underscored its relevance in humanitarian settings.

WP4 focused on deploying VarScout in Kenya, training ward agricultural extension officers across major potato-producing areas to collect and share data on potato variety adoption, and thereby supporting decision-making and policy development within the agricultural sector.

WP5 outlined a research agenda to establish baseline indicators for evaluating seed sector policies and supported a unified approach for impact assessment within CGIAR's Genetic Innovation (GI) Science Group, targeting the evaluation of market-intelligent varieties and seed system innovations.

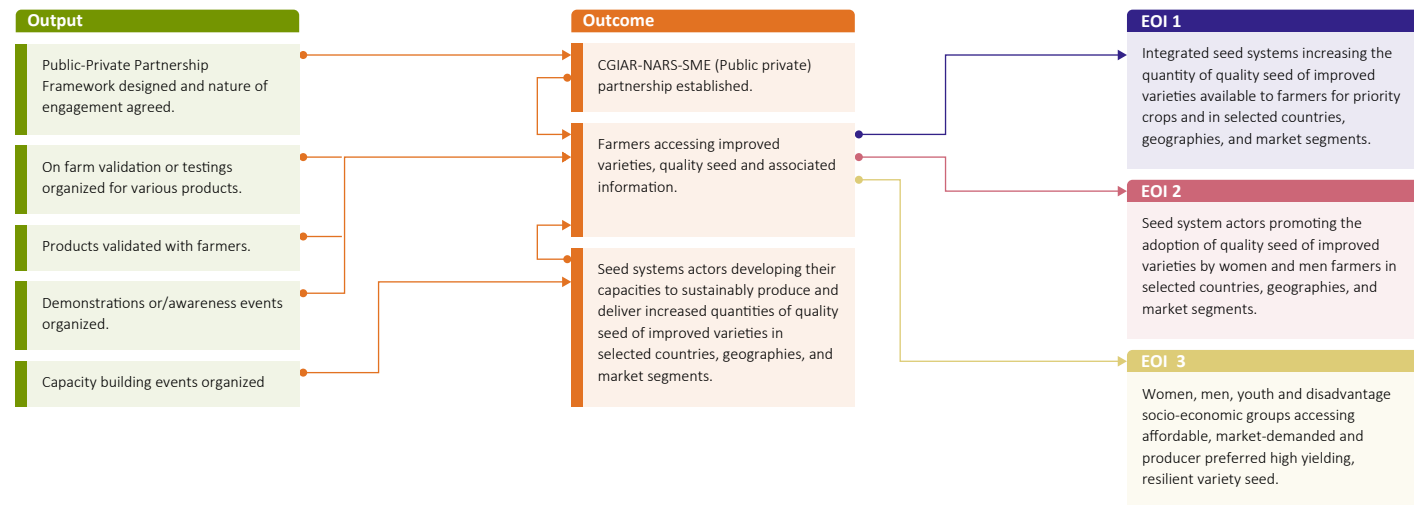


Participatory varietal assessment in Nepal.
Credit: Swati Nayak

Section 3: Work Package progress

WP1: Demand-driven cereal seed systems

On track



Work Package 1 progress against the theory of change

WP1 outcome 1 focuses on establishing public-private partnerships and engaging CGIAR-NARS-SME networks for production and supply of quality seed of new cereal products (inbreds or hybrids) in response to demand signals. In 2023, the cereals team partnered with several private sector enterprises for licensing/commercialization, especially of hybrid maize. Strategic EGS linkages, multiplication, and sales were facilitated between private and nongovernment organizations across major countries of Africa, Asia, and Latin America. Nearly 100 registered producers were engaged for strategic seed increase. Approximately 150 products were subjected to systematic validation through this network and 1350 on-farm trials were organized. Approximately 50,000 stakeholders were engaged directly in various demand-creation efforts. More than 50 capacity building events were organized with network partners, with 35 percent women participation.

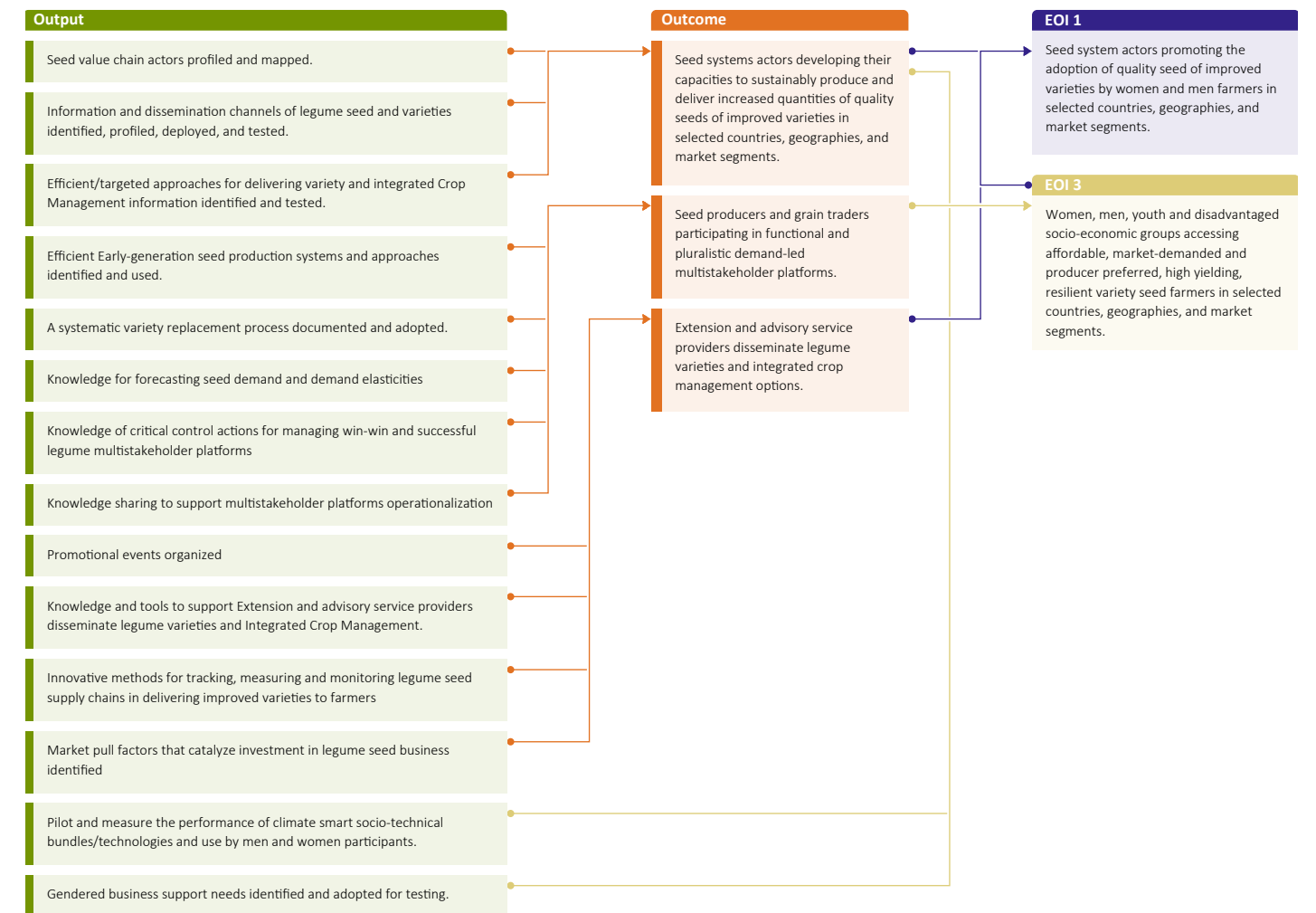
WP1 outcome 2 focuses on farmers accessing improved varieties, quality seed, and associated information. Through strategic partnerships with breeding institutions and public, private, and community or nongovernment multipliers, both EGS and certified seed of improved varieties was multiplied and made available.

Through registered seed producers, 5,500 MT of quality seed maize, wheat, and rice varieties were produced, with potential to reach at least 200,000 farmers in the next season. Farmers were extensively engaged in varietal selection and evaluation of suitable products: 150 products across 35 market segments and 1,350 sites were validated through farmer-led testing. Participatory varietal cafeterias were also hosted for demand generation and multistakeholder engagement in the process. Nearly 50,000 farmers and associated stakeholders were engaged directly in information-sharing and demand-creation efforts.

WP1 outcome 3 focuses on developing capacities of seed systems actors to sustainably produce and deliver increased quantities of quality seed of improved varieties in selected countries, geographies, and market segments. Gender-inclusive training around quality seed production were organized for seed growers in Bangladesh, India, and several African countries in collaboration with WP4. Apart from master trainee farmers, many small-scale institutions (including farmer producer companies, cooperatives, and other SMEs) were significantly capacitated through targeted technology introduction, organized training, and associated small equipment support.

WP2: Boosting legume seed through a demand-led seed approach

On track



Work Package 2 progress against the theory of change

WP2 uses a DLSS approach to accelerate adoption and varietal turnover in Burundi, Cameroon, Ethiopia, Eswatini, Ghana, Kenya, Mozambique, Nigeria, Rwanda, Uganda, Zambia, and Zimbabwe. The underlying assumption of the DLSS is that downstream market demand for legume grains directly influences the upstream supply of high-quality seeds. It is operationalized through a multistakeholder partnership framework. The DLSS was picked up in Nigeria and Ghana especially, where it is being piloted for cowpea and soybean seed systems.

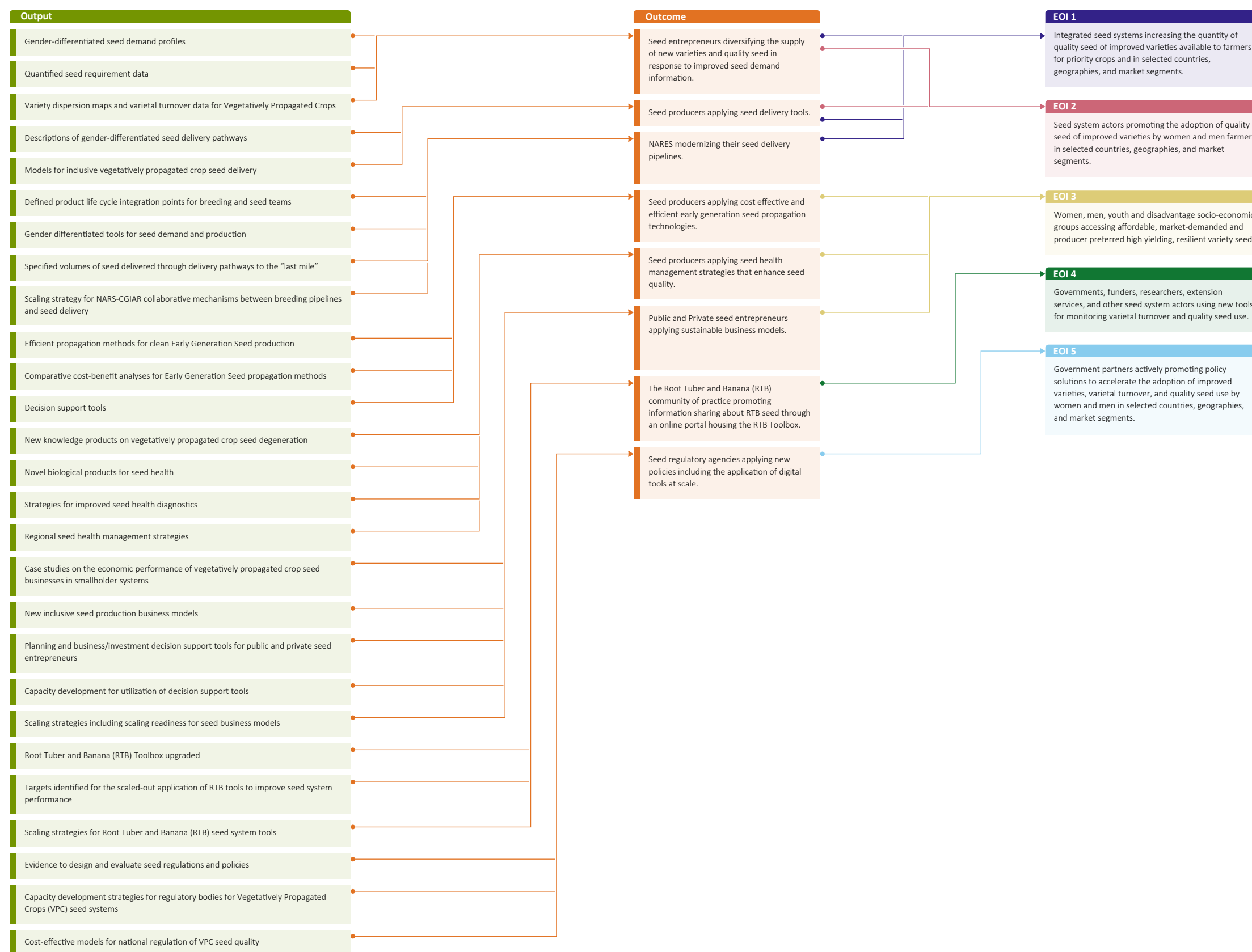
WP2 outcome 1 focuses on enhancing the capacities of seed system actors to produce and deliver targeted legume seed varieties sustainably. In 2023, 8,313 actors (including 3,512 women)—a 262.5 percent increase from 2022—received training on various aspects of seed production, marketing, and business management. These activities resulted in the production of bean seed (breeder—145 tons, foundation—624 tons, and certified—17,522 tons); cowpea seed (breeder—19.5 tons, foundation—197 tons, and certified—3,414 tons); and soybean seed (breeder—9.1 tons, foundation—21.4 tons, and certified—3,585 tons). Of the certified seed production, a significant proportion was under 10 years old (82 varieties in total): 62.5 percent for beans, 82.8 percent for cowpeas, and 36.1 percent for soybeans. This trend indicates a shift toward new varieties.

WP2 outcome 2 involves engaging seed producers and grain traders through functional and pluralistic demand-led MSPs. In 2023, 56 MSPs (with 636 actors), primarily led by seed producers and traders, played a crucial role in promoting new varieties, establishing business linkages, attracting investment in seed and grain production, testing innovative technologies, and fostering actor engagement. These MSP-driven activities included 4,520 demonstrations, 131 field days, 84 fairs/meetings/information sessions, and 23 agricultural shows, reaching 44,422 individuals (49.4 percent women). In Nigeria, the off-taker-led MSP model, inspired by the PABRA-facilitated MSPs, successfully reached 1,200 smallholder farmers (45 percent women) with improved cowpea varieties. Within just two years of adopting the DLSS, our partners increased the production of certified and quality-declared cowpea seed fivefold, increasing from an initial 157 tons to 822.2 tons.

WP2 outcome 3 focuses on extension and advisory service providers disseminating legume varieties and integrated crop management options. In collaboration with public and private extension services, WP2 trained 141 extension agents (including 63 women) from Ghana, Kenya, Nigeria, Uganda, Zambia, and Zimbabwe in various aspects of the seed value chain, including production, business, and marketing operations. These trained agents were crucial in supporting seed producers, inspecting seed fields, establishing demonstrations, and hosting field days.

WP3: Scaling and delivery of vegetatively propagated crops

On track



Work Package 3 progress against the theory of change

The key **TOC assumption** behind WP3's activities centers on this question: Can sustainable delivery of VPC seed at scale be achieved for different market segments and farmer preferences by applying novel technologies, tools, or business models? WP3 outcomes 1–3 focus on enhancing seed delivery mechanisms for VPCs, refining seed demand characterization, and streamlining breeding pipelines. We have made substantial achievements on these objectives.

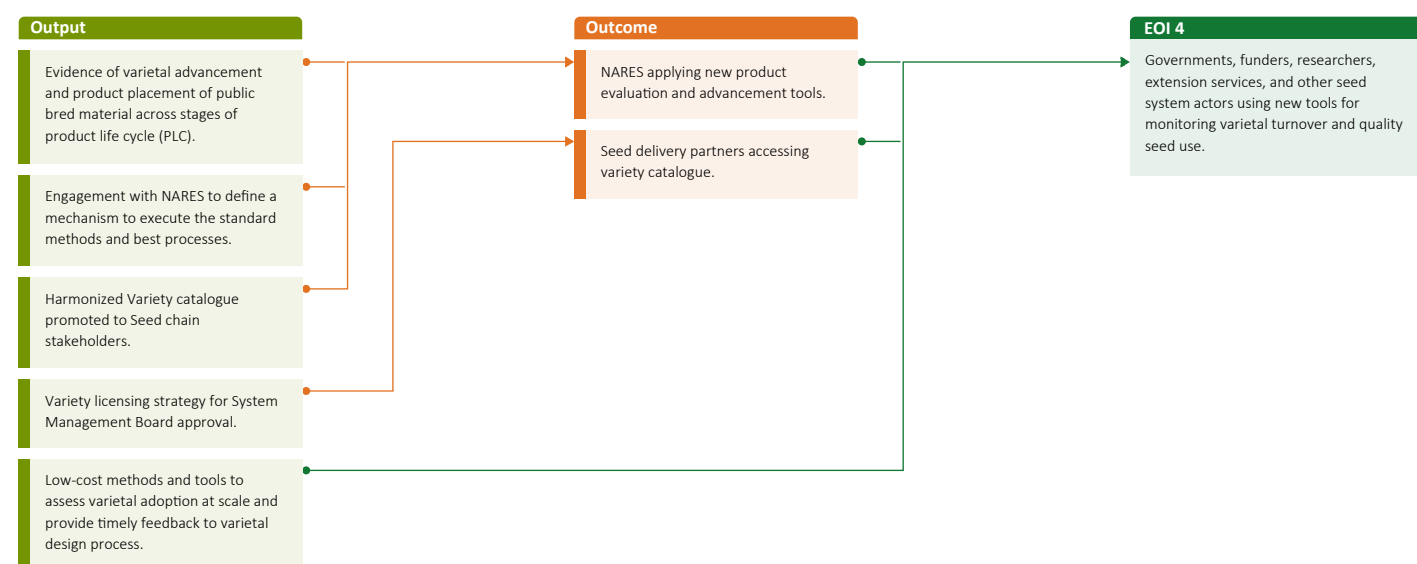
For **WP3 outcome 1**, significant progress has been made toward long-term baselining, including the estimation of WAVA for cassava for 2018–2022 in Nigeria and Tanzania, utilizing data from the Seed Tracker ICT platform. Additionally, a user-friendly, web-based tool was developed to estimate national-level seed requirements across the VPC seed value chain, which was validated for sweet potato, potato, cassava, and banana. Extensive documentation of the banana seed system in West and Central Africa, alongside a seed sourcing network analysis for Uganda, shed light on seed delivery pathways. Moreover, demand forecasting models for cassava seed in Tanzania was developed to ensure consistent supply within the VPC seed delivery system, and systematic reviews were conducted to define seed delivery profiles and pathways for potato varieties for the processing industry. Additionally, formal and informal seed systems were linked through establishment of VPC seed producers' associations/cooperatives in Tanzania and Uganda.

More than 30 members of NARS and national academic partners were trained in demand characterization and estimation tools across Nigeria, Tanzania, and Uganda. **WP3 outcome 4** focuses on enhancing EGS production through the implementation of cost-effective technologies (such as sandponics, apical rooted cuttings, semi-autotrophic hydroponics, and pencil stem cuttings), supported by publication of manuals and guidelines for seed production management. Through WP3 outcome 5, the value propositions were made for certified cassava and sweet potato seed, with results demonstrating that certified seed can yield 80 percent more than recycled seed of the same variety.

Based on these findings, validated business models were developed for sweet potato seed businesses in Uganda and Tanzania, along with investment decision tools for sweet potato and potato. Gender dynamics were also explored in Tanzania's sweet potato seed business. **WP3 outcome 7** involved updating <https://tool4seedsystems.org/> with additional tools, which proved effective in enhancing VPC seed systems, particularly in humanitarian contexts. Finally, progress was made in establishing protocols for quality-declared seed producers in Tanzania and validating new VPC seed standards and regulations in Kenya.

WP4: Partnerships, capacity building, and coordination to ensure uptake of public-bred varieties and other innovations

On track



Work Package 4 progress against the theory of change

The key **TOC assumption** driving WP4 activities is represented by this question: Can partnerships on product advancement tools, licensing strategies, digital data for varietal adoption, or seed catalogue availability promote best practices and decision-making for seed value chain actors?

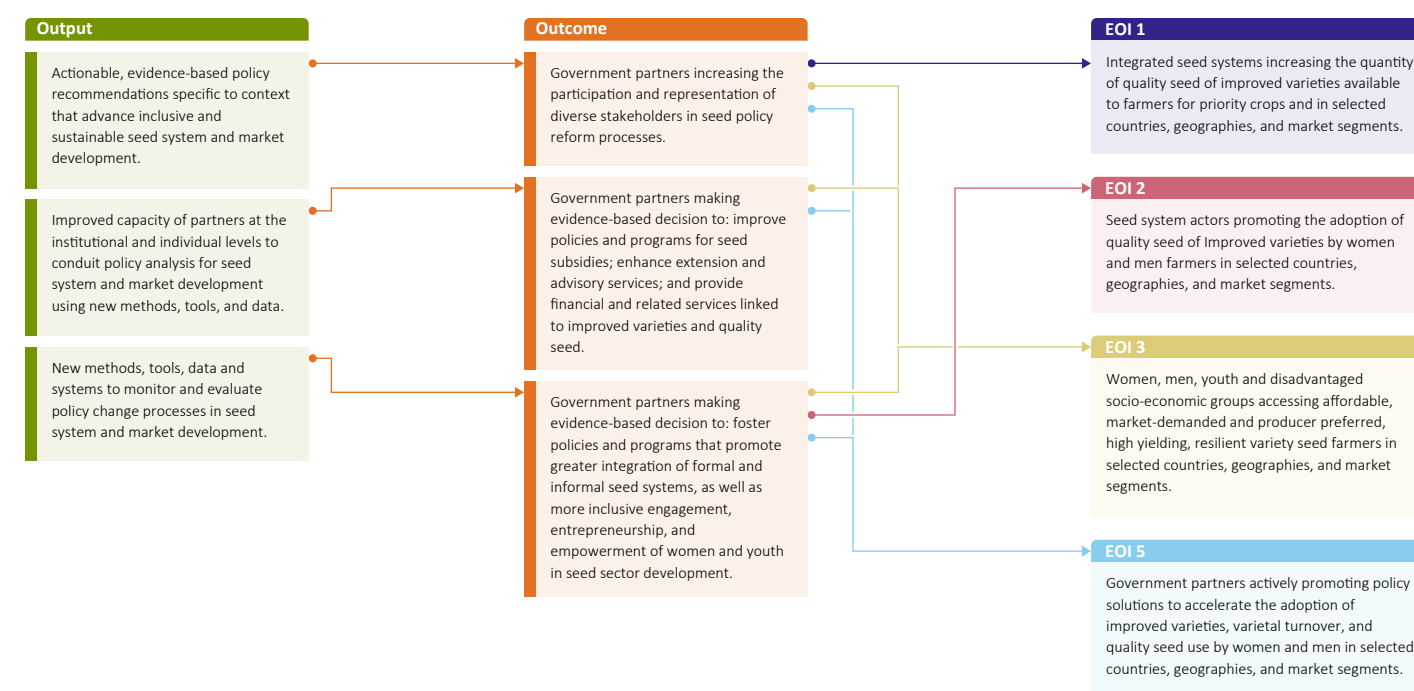
For **WP4 outcome 1**, NARES partners were trained to use late-stage product advancement tools in six different countries in Southeast Asia and sub-Saharan Africa, in close collaboration with other relevant Seed Equal WPs. Capacity building for rice seed production and business essentials were conducted in Bangladesh, India, Kenya, and Tanzania, with a focus on fostering seed systems innovations and ensuring best practices in seed production and business development. Scientists from Yemen were also trained on potato seed production practices. NARES partners from 15 countries across sub-Saharan Africa were trained on demand-driven seed production business model and use of digital tools for seed sharing (Seed Tracker in Nigeria). WP4 has also established partnerships with seed industry partners, notably ISF and Asia Pacific Seed Association (APSA) to help advance quality seed use by farmers. An initial draft report of the Product Advancement Meetings/Process has been completed

for three crops (potato, rice, and soybeans) in India, Kenya, Viet Nam, and Zambia. A draft CGIAR germplasm licensing strategy was completed in collaboration with Accelerated Breeding and Genebanks Initiatives, shared with leadership, and will be revised and finalized in 2024 for system-wide adoption. A guideline and online tool for varietal licensing options for NARS in Kenya, Tanzania, and Uganda was drafted and will be finalized in 2024, and significant progress was made in training selected NARS in the use of these tools.

For **WP4 outcome 2**, substantial progress was made on using VarScout as a low-cost data collection tool for monitoring varietal adoption and biodiversity, initially for 10 priority crops and 20 priority countries. The work of **WP4 outcome 3** is closely related, through which VarScout was made available to extension officers in Kenya, where increased use is expected, and in Colombia and Bolivia to record potato biodiversity. Activities on the CGIAR seed catalogue advanced with discussions on scope, harmonization, priorities, and hosting platforms. A prototype for three crops (rice, potato, soybean) will be started in 2024.

WP5: Policies for varietal turnover, seed quality assurance, and trade in seeds

On track



Work Package 5 progress against the theory of change

WP5's underlying assumption is that evidence-based policy recommendations and policy engagement are necessary to advance efficient, sustainable, and inclusive seed market development. WP5's work in 2023 jointly contributes to its outcome 1 (inclusive seed sector growth resulting from improved policies, investments, and regulation for variety registration and release), outcome 2 (accelerated varietal turnover and increased demand for quality seeds resulting from improved policies and programs for seed subsidies, extension and advisory services, and credit insurance), and outcome 3 (at least three countries will invest in capacity development to strengthen their policy analysis, design, and implementation capabilities and introduce a predictable policy environment).

In 2023, WP5 provided evidence-based recommendations on policy solutions aimed at increasing the rate of varietal turnover, improving seed quality assurance systems, and advancing trade in seeds (EOIO 5), while also contributing to a wider range of outcomes in the Initiative's TOC.

WP5 directly informed policy change processes in six countries: Ethiopia, India, Kenya, Nigeria, Rwanda, and Uganda. Significant progress was made in generating novel evidence and

recommendations on a set of challenging regulatory issues in each country. As a result of WP5's collaborative work, several major policy, investment, and regulatory changes are advancing rapidly.

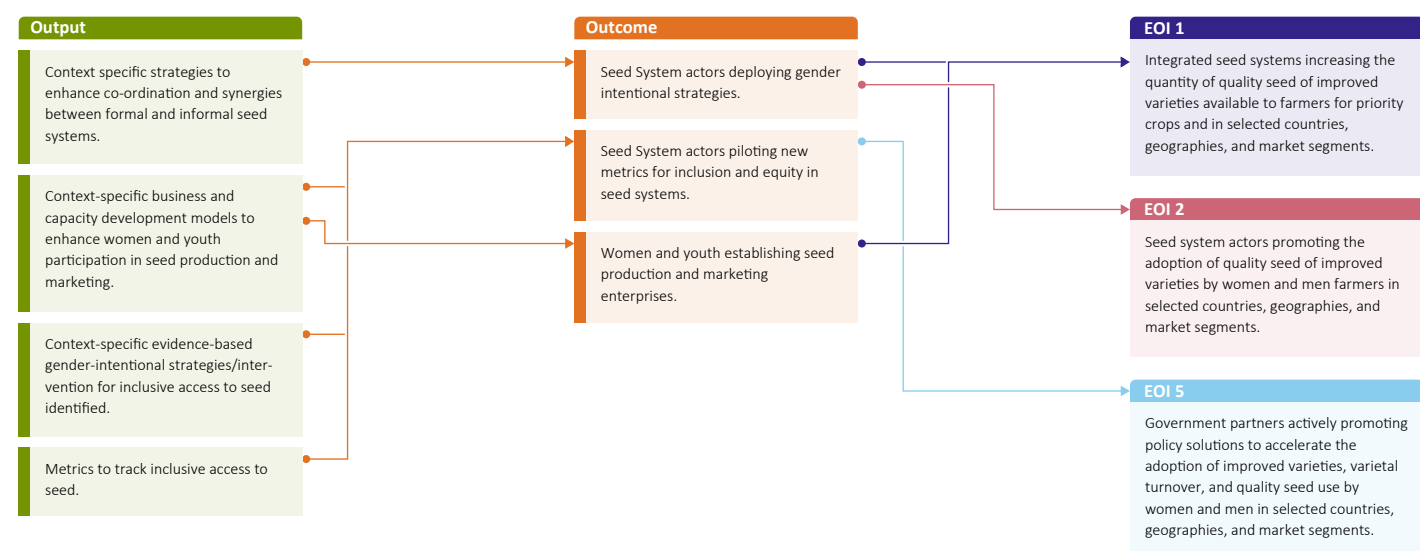
In Kenya, WP5 continued to support national consultation processes aimed at reforming the regulatory regime that governs the production and sale of vegetative planting material, with expectations that new rules favoring small-scale farmers will be published in 2024.

In Nigeria, WP5 worked closely with national regulators to enhance capacity to manage the challenge of quality seed supply in a large and fragmented market. In Rwanda, WP5 identified legal and procedural gaps in the country's nascent seed regulatory system, encouraged private sector participation in seed sector development, and committed CGIAR to the new Seed Centre of Excellence operated by the One Acre Fund with the Rwanda Institute for Conservation Agriculture and the Buffett Foundation.

In Uganda, WP5 continued to generate evidence and engage seed policy actors on issues related to legal and regulatory changes that are required to bring the seed sector into closer alignment with national strategies and policies, and innovative products and services meant to improve seed market performance and inclusion.

WP6: Scaling equitable access to quality seed: Reaching the unreached with quality seeds and traits

On track



Work Package 6 progress against the theory of change

WP6 focuses on developing and validating strategies for inclusive access to quality seed by unreached groups, particularly women. The underlying assumptions of this WP are that (1) strategies to reach and benefit women with quality seeds need to be intentional and require synergies between formal and informal systems. Women and youth can play a significant role in developing decentralized seed systems that meet their needs. (2) To reach that goal, it is important to be able to measure inclusive access to manage seed systems.

WP6 generated evidence-based scaling strategies for providing access to quality seeds to women and other unreached groups (output 6.2.1), based on a scoping review focused on low and middle income countries (LMICs) and studies in Odisha on paddy and pulses highlighting the gender and social dynamics of seed systems. Activities in Uganda and Cameroon on [seed credit models](#) and [understanding trader's perspectives](#) also provided insights. Collaborative activities with the Center for Behaviour Change and Communication (CBCC) to increase access to information, awareness of improved seed, and participation of youth and women in seed enterprises identified five key levers of change and are being piloted in Uganda (outcome 6.1).

With TASAI, we conducted a review of frameworks, metrics, and concepts on access to seed, which showed that none of the five

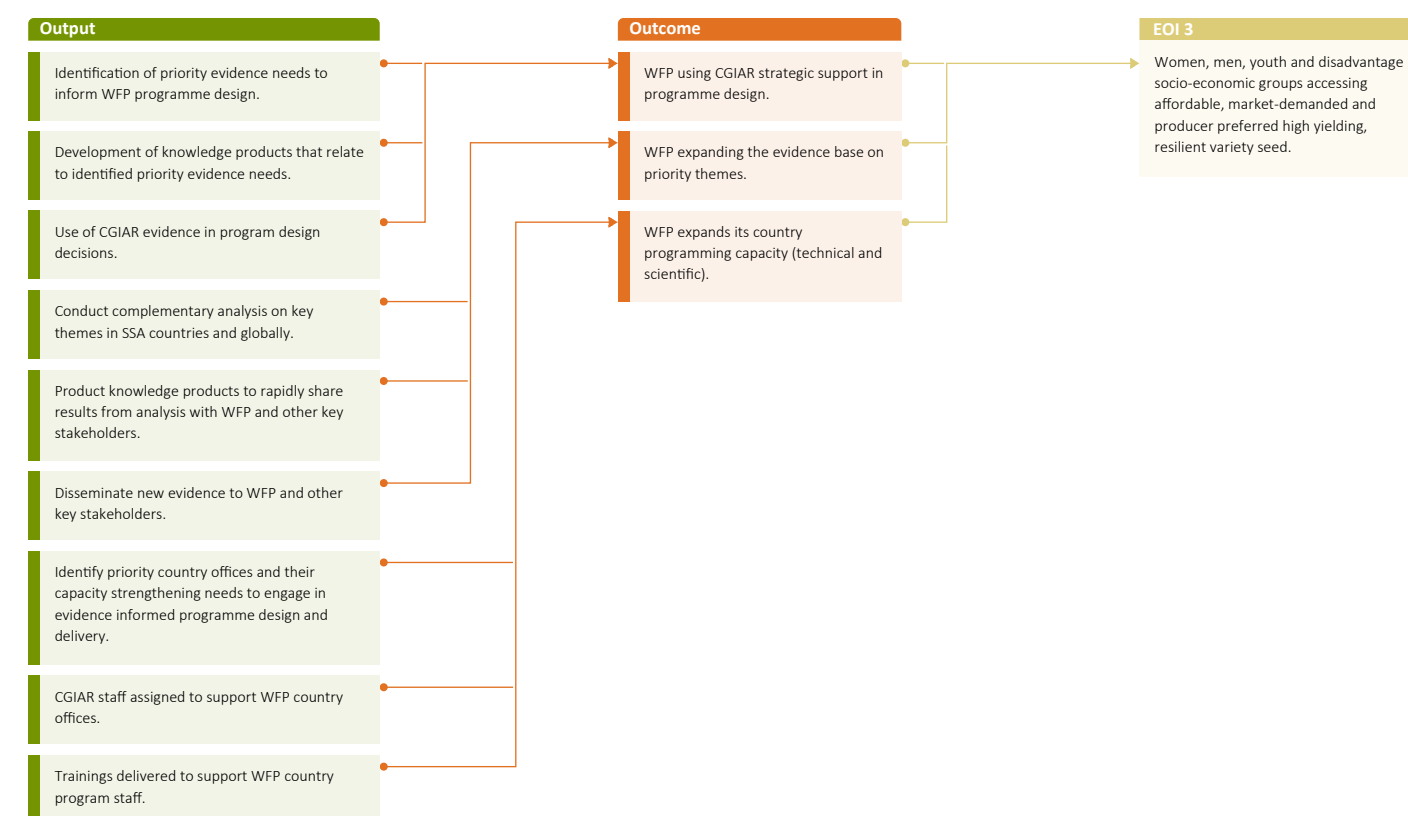
initiatives studied are tracking or measuring gender-equitable seed access. WP6 developed new metrics, and 31 seed systems experts from four countries [reviewed](#) the proposed metrics and tools (output 6.4). These were piloted in Uganda and will be promoted for use by other key actors in 2024 (outcome 6.2).

CRISP and MSSRF conducted studies on [seed villages](#) and community seed banks in India to understand their role in bridging formal and informal seed systems (output 6.1). Several FPCs in India are engaging in production of certified seed and marketing with formal seed value chains, demonstrating opportunities to bridge these systems.

Through 16 FPCs in India, and together with CSA, Pragati, and ALF, WP6 is engaging approximately 500 women and 700 men for seed production using diverse capacity building and business models (output 6.3 and outcome 6.3). As part of an Odisha government-funded bilateral project of IRRI, 14 FPOs multiplied seeds of six paddy varieties. IRRI provided training to these FPOs following a season-long Farmer Field and Business School model. These activities follow different models of capacity and business development, and are being documented for learning purposes.

WP7: Strengthening resilience through inclusive seed and product value chains

On track



Work Package 7 progress against the theory of change

The key assumption of WP7 is that WFP and other stakeholders welcome and support the Initiative or collaboration.

Progress on **outcome 1 (WFP using CGIAR strategic support in program design)** is on track. WP7 worked closely with WFP and other stakeholders to design and implement the crop yield estimate for OFSP in Karamoja. Further, capacity-building support was provided to WFP and partners in good agronomic practices for sweet potato and bean commodities to ensure improved productivity and resilience of populations that are supported by WFP programs (namely, school children, youth, and women) in selected districts of Karamoja (Uganda) and Malawi.

Progress on **outcome 2 (WFP expanding the evidence base on priority themes)** is on track. WP7 team developed three manuscripts on the evidence of integrating climate-smart nutrition-sensitive agriculture (NSA) interventions in humanitarian settings to improve nutrition outcomes. NSA interventions can potentially build resilience to withstand various shocks among the population in these fragile environments. These manuscripts are under peer review for publication.

Progress on **outcome 3 (WFP expands its country programming capacity, technical, and scientific)** is on track. Because of our work with WFP in Uganda and Malawi, WFP has increased the number of schools where they are implementing the HGSP program in Karamoja from about 20 schools in 2022 to 100 schools in 2023.

Work Package progress rating summary

WORK PACKAGE	PROGRESS RATING & RATIONALE
1	<p>Progress rating</p> <p>WP1 progress is on track. So far achievements in a number of market segments, organization of on-farm trials and building of partnerships for strategic seed linkages, and seed multiplication and delivery have exceeded the year two targets.</p>
2	<p>Progress rating</p> <p>WP2 results align with the Plans of Results and Budgets (PORB) and qualify 2023 progress as on track.</p>
3	<p>Progress rating</p> <p>WP3 is on track, and work proposed in the PORB has been achieved. 2023 was a strong year for delivery for WP3, including 76 results reported in PRMS, more than a quarter of which were new, high-quality knowledge products. WP3 has expanded its activity in Bangladesh, Cambodia, Laos, and Peru, in addition to the geotargeting regions in Nigeria, Tanzania, and Uganda where cross-Center teams ran capacity development workshops for national partners together with WP4. Outcome progress was measured through application of new WAVA metrics and high (beyond target) volumes of seed delivery were achieved for target VPC crops.</p>
4	<p>Progress rating</p> <p>WP4 progress is on track, and 2023 outputs, available in draft reports, will be sent for system-wide consultation during 2024.</p>
5	<p>Progress rating</p> <p>WP5 progress is on track and aligned with the PORB. Outputs have been produced as planned.</p>
6	<p>Progress rating</p> <p>WP6 progress is on track. It aligns with the PORB. Outputs have been achieved, and outcomes are either in progress, as per plan, or have been achieved already and exceeded target, particularly in engaging women in seed production and marketing. New metrics have been developed and piloted in 2023, and will be promoted for use by other actors in 2024. Several diagnostic and baseline studies have been completed to generate evidence on gender-intentional strategies for access and synergies between formal and informal systems.</p>
7	<p>Progress rating</p> <p>WP7 is on track and very much aligned with the PORB. All three outcomes have deliverables reported and carried out in implementation countries of Uganda and Malawi in collaboration with WFP-country offices. These include working with WFP and other stakeholders to design and implement the crop yield estimate for OFSP in Karamoja as well as capacity sharing with stakeholders on GAP for sweet potato and bean value chains.</p>

Definitions

On track

- Annual 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

- Annual 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

- Annual 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.



A happy farmer counting the number of vines harvested from a net tunnel, Nyakasanga, Mwanza, Tanzania. Credit: Kwame Ogero

Section 4: Key results

This section provides an overview of results reported by the CGIAR Research Initiative on Seed Equal in 2023. These results align with the CGIAR Results Framework and Seed Equal's theory of change. Source: *Data extracted from the CGIAR Results Dashboard on 29 March 2024.*

OVERVIEW OF REPORTED RESULTS

Outputs



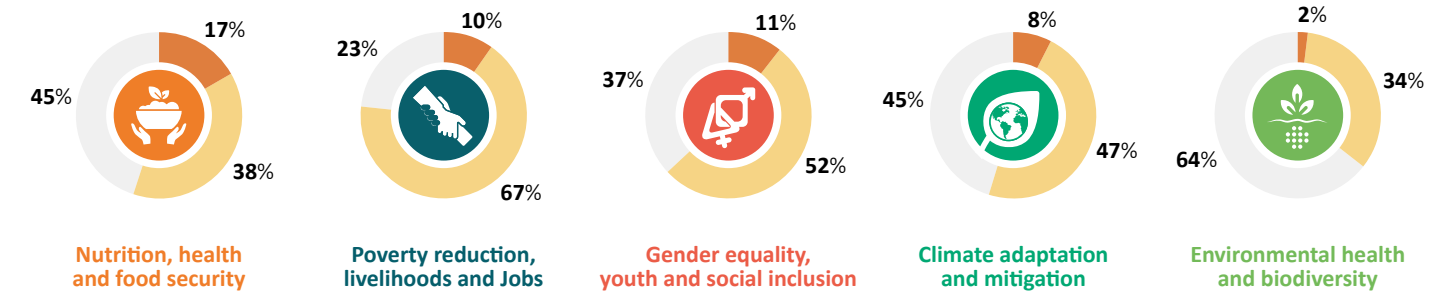
Outcomes



CONTRIBUTIONS TO THE UN SUSTAINABLE DEVELOPMENT GOALS



PERCENTAGE OF REPORTED RESULTS TAGGED TO CGIAR IMPACT AREAS

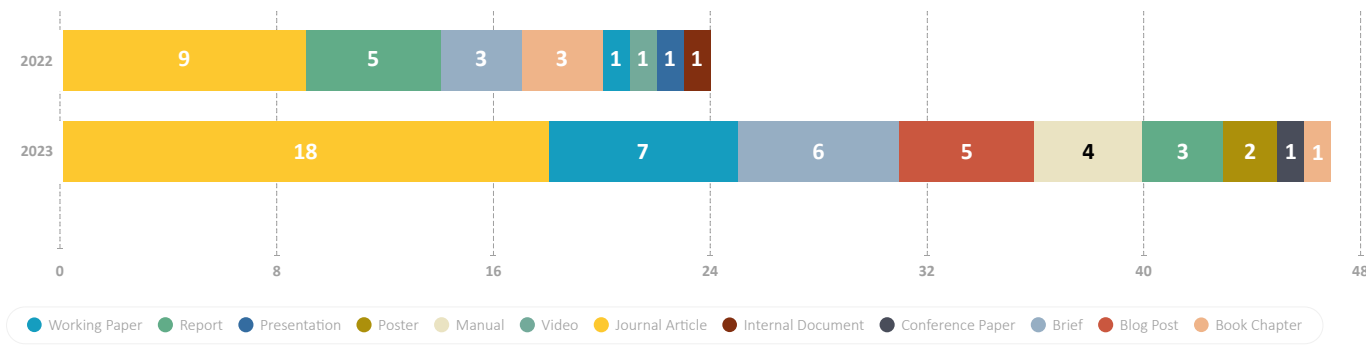


● **Principal:** The result is principally about meeting any of the Impact Area objectives, and this is fundamental in its design and expected results. The result would not have been undertaken without this objective.
● **Significant:** The result has made a significant contribution to any of the Impact Area objectives, even though the objective(s) is not the principal focus of the result.
● **Not targeted:** The result did not target any of the Impact Area objectives.

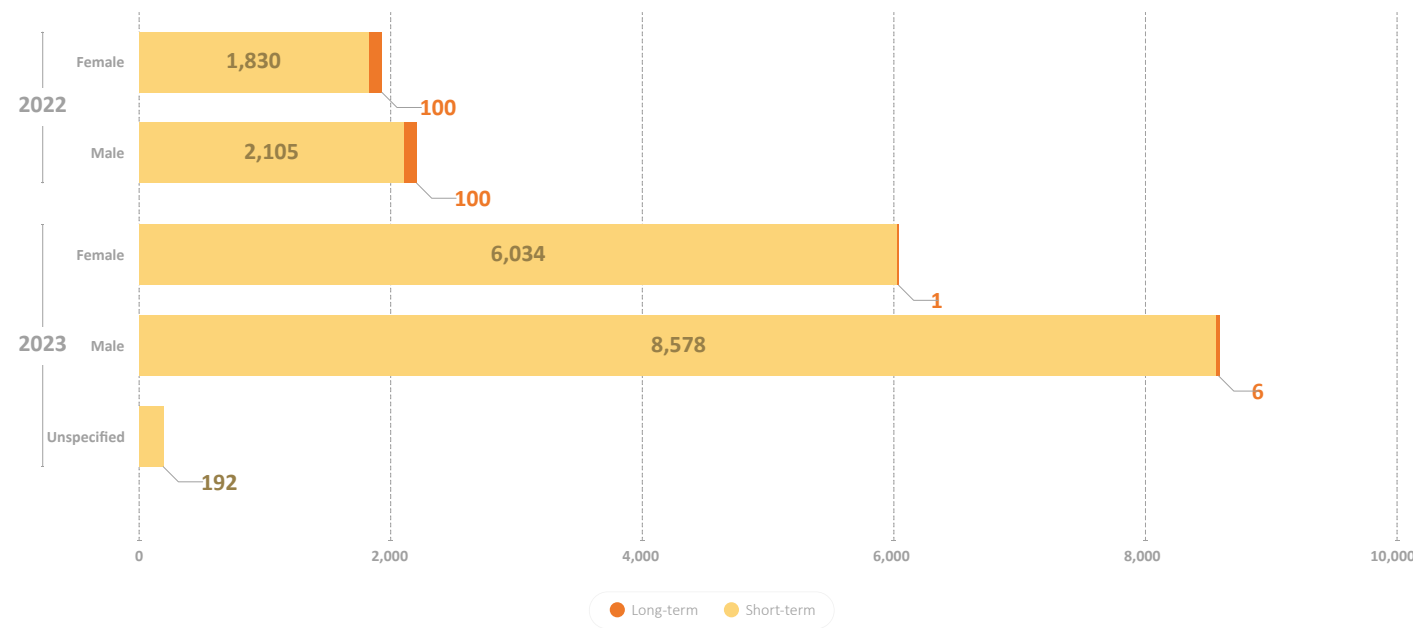
NUMBER OF INNOVATIONS BY READINESS LEVEL



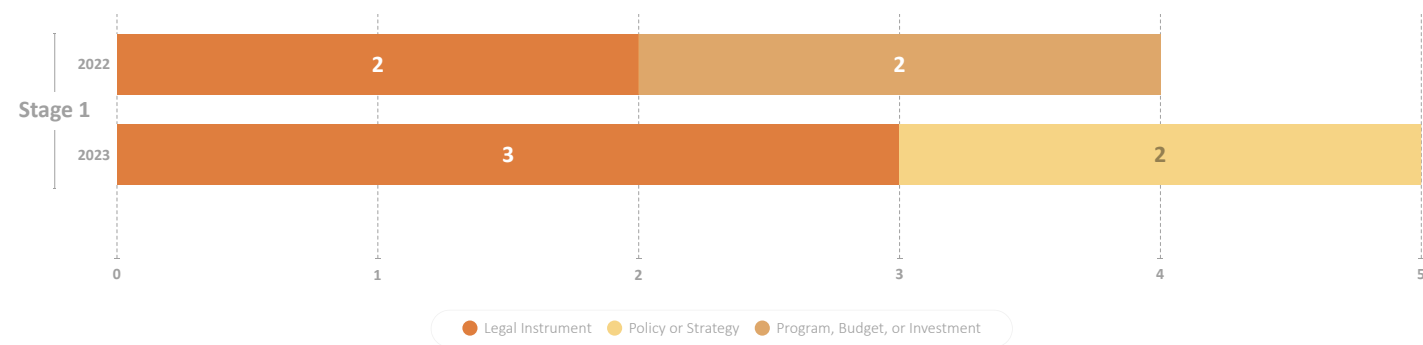
NUMBER OF KNOWLEDGE PRODUCTS BY TYPE (TREND OVERVIEW, 2022-2023)



NUMBER OF INDIVIDUALS TRAINED BY CGIAR (TREND OVERVIEW, 2022-2023)

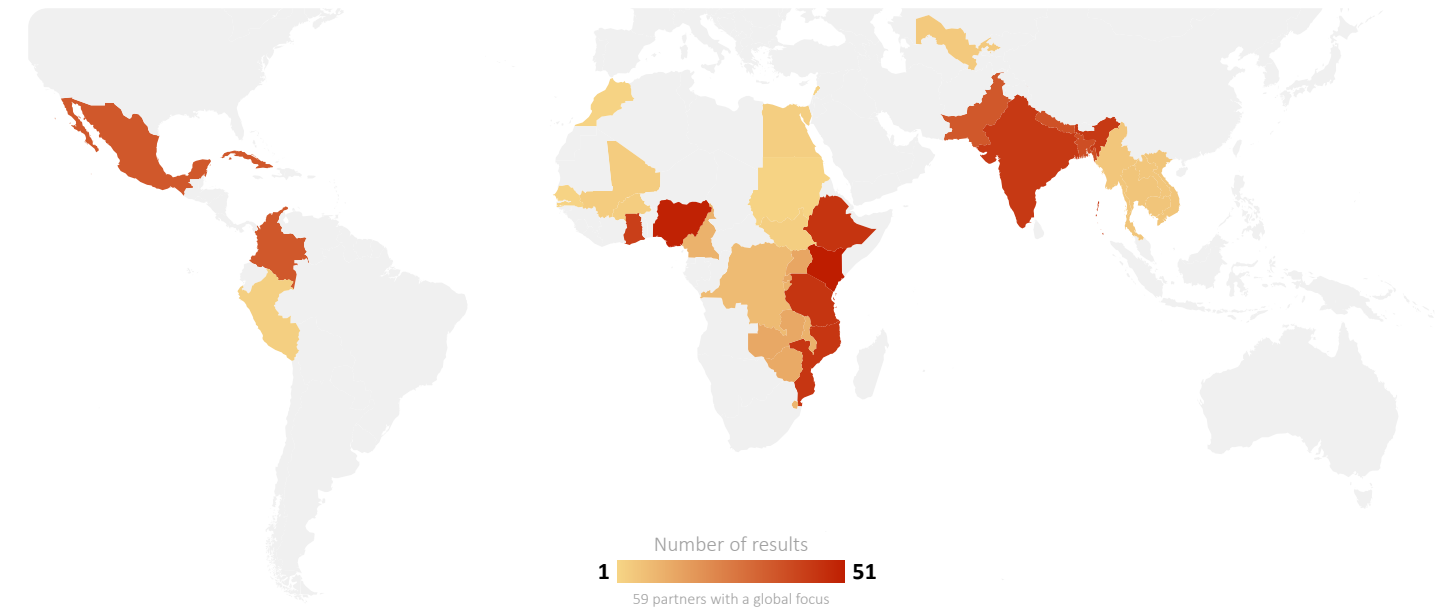


NUMBER OF POLICIES BY STAGE AND BY TYPE (TREND OVERVIEW, 2022-2023)



NUMBER OF RESULTS BY COUNTRY

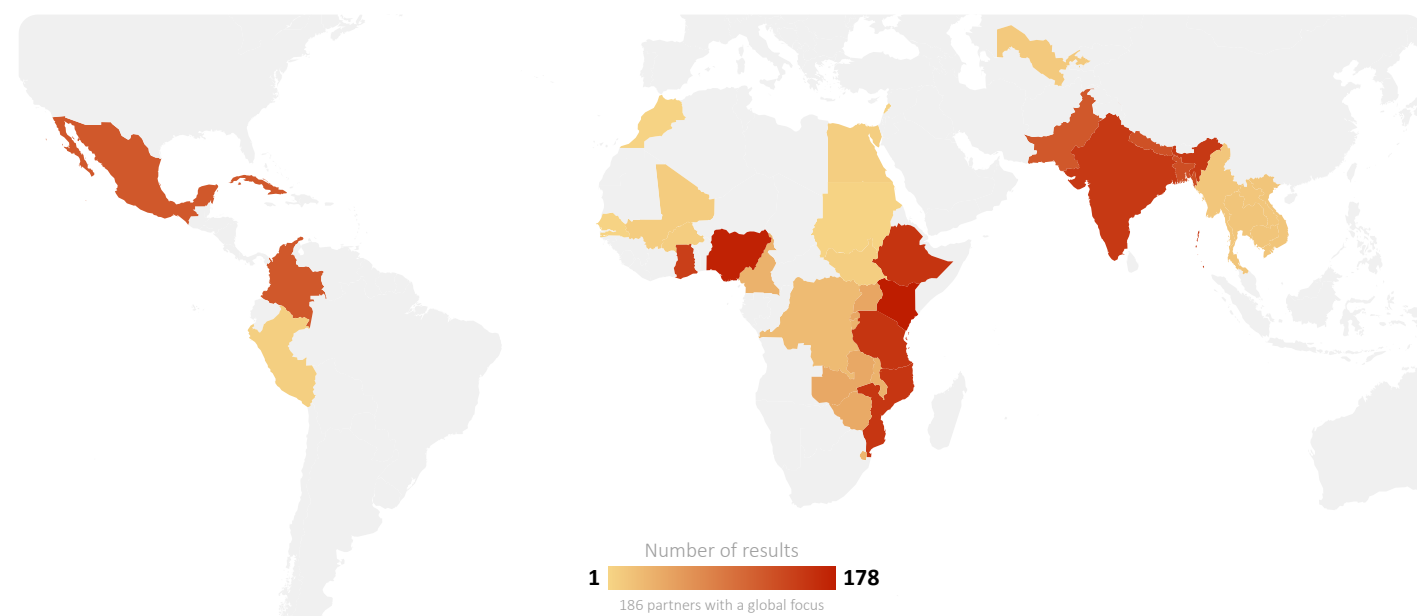
Data here represents an overview of reported results in 2022 and 2023. One result can impact multiple countries and can therefore be represented multiple times.



Woman seed producer selling the certified and branded seed she has produced to a local trader.
Credit: Sarthak Panda, Access Livelihood Foundation

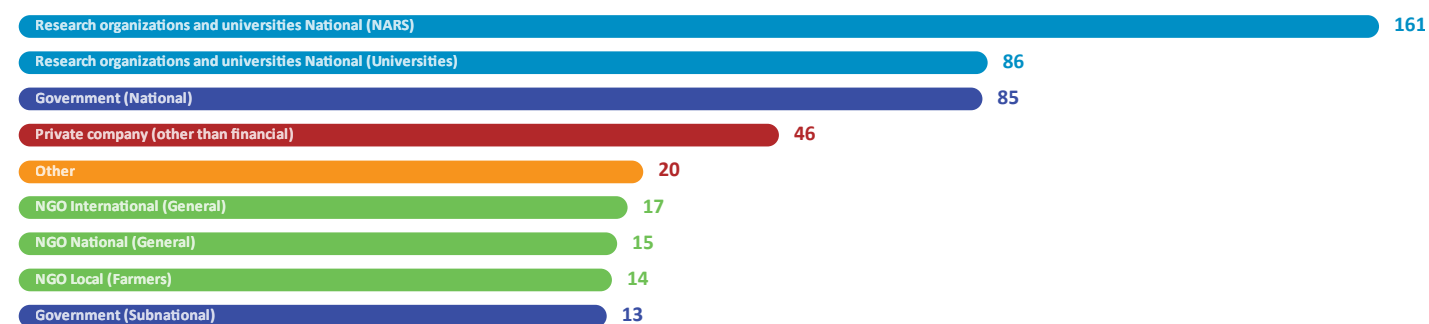
Section 5: Partnerships

PARTNER MAP



Colors represent the number of different partners which collaborated on results achieved in a specific country. One result can impact different countries and therefore the same partner can be associated with more than one country. Source: Data extracted from the [Results Dashboard](#) on 29 March 2024.

NUMBER OF 2023 RESULTS BY PARTNER TYPOLOGY



Source: Data extracted from the [Results Dashboard](#) on 29 March 2024.

Partnerships and Seed Equal's impact pathways

Diverse partners from national bodies and formal and farmer-managed seed systems play a critical role in strengthening seed systems actors' capacities and uptake of quality seeds. This summary provides an overview of the collaborative efforts across different WPs within the Seed Equal Initiative, involving a wide range of partners and activities aimed at strengthening seed systems globally.

WP1 engaged with 100 registered producers across the private, public, and nongovernment sectors for supply-side innovations in seed production, distribution, and business. The partnership network included seed trade agencies, corporations, NGOs, and community enterprises, involving both formal and informal groups. These collaborations aimed at creating linkages for EGS and enhancing quality seed production through training and capacity building, including smallholder and women-led seed enterprises. (PRMS result No-7045, 7031,7023, 7018, 6922).

WP2 established partnerships with 636 value chain actors across 56 MSPs, promoting collaboration in defining varieties, producing seed, marketing, and capacity building. In sub-Saharan Africa, WP2 engaged with 11 NARS and 2 universities to ensure the adaptation of the DLSS to the local context, promoting the adoption of new varieties and ensuring the availability of quality seed. Clear attitude and behavior shifts were observed, placing new varieties at the center of seed production in soybean, cowpea, and common bean.

WP3 worked with partners in 15 countries, notably Nigeria, Tanzania, and Uganda, on EGS technologies, demand analysis, and seed quality control, focusing on vegetatively propagated crops. Collaborations with NARS, universities, and digital tool developers (Geospace) aimed to improve these seed systems. In Tanzania, nearly 13 million high-quality cassava stems were produced and sold, covering about 13,000 hectares, with the average varietal age for cassava dropping significantly. Similar partnerships supported sweet potato and potato

seed delivery in other countries. WP3 also enhanced its VPC seed systems toolbox [online](#), facilitating a virtual workshop that reached stakeholders in more than 29 countries.

WP4 partners with organizations such as Syngenta Foundation, New Markets Lab, Resonanz Group, Wits University, NIAB/Cambridge Uni to contribute to the EOIO. A key WP4 breakthrough is the signing of an MOU with ISF, an international organization that includes national seed trade associations, seed companies, and technical providers related to seed, for scaling quality seed of new varieties.

WP5 formed partnerships with government ministries, research agencies, private sector associations, and civil society organizations in countries such as India, Kenya, Nigeria, and Rwanda to address policy questions and data needs. These collaborations, including with policy think tanks and research organizations, aimed at developing

innovative solutions to seed policy and regulatory challenges. Additionally, partnerships focused on translating policy ideas into actions, emphasizing capacity building for public research and regulatory bodies.

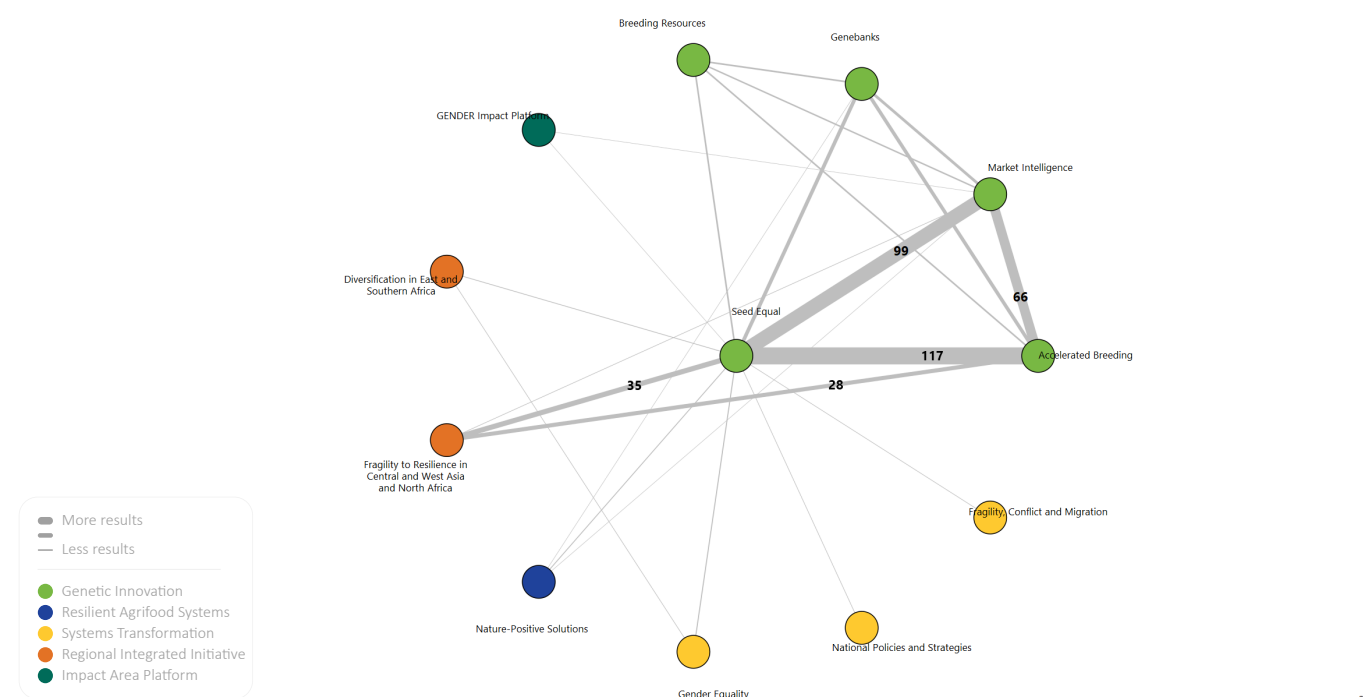
WP6 partnered with CSA, Pragati, and ALF to support 16 FPCs, including around 500 women and 700 men, to engage in seed production and marketing in three states in India. In Uganda, WP6 partnered with CBCC to increase access to information, awareness of quality seed, and youth and women's involvement in seed enterprises. TASA led the development of metrics to assess inclusive seed access in Uganda. **WP7** collaborates with partners in Malawi, Tanzania, and Uganda, including WFP, National Agricultural Research Organization, Ripple Effect, and local governments, focusing on improving access to seeds and promoting food security.



Joint field visit to women led seed production cluster in India. Credit: Swati Nayak (IRRI)

Section 6: CGIAR Portfolio linkages

SEED EQUAL'S INTERNAL PORTFOLIO NETWORK



Portfolio linkages and Seed Equal's impact pathways

Seed Equal's WPs 1, 2, and 3 focus on accelerating seed delivery, scaling varietal turnover, and adopting cereals (WP1), legumes (WP2), and vegetatively propagated crops (WP3). This integration deeply relies on the **Accelerated Breeding** and **Market Intelligence** Initiatives, and is closely tied to crop-specific breeding programs and targeted market segments. Products from breeding pipelines undergo validation through farmer and market checks for strategic positioning and replacement strategies. In addition, **WP1** collaborates with **WP4** for capacity building and leverages convergence initiatives in Asia and Africa, such as workshops and seed demand tools like SeedCast in Tanzania, to enhance quality seed production and varietal intelligence. **WP2** establishes connections with **WP6** for equitable seed access and linking with Gender Equality, Youth and Social Inclusion Initiatives, with **WP7** for emergency seed access, and with **WP4** for legume seed value chain skills and digital variety catalogues. The link between **WP2** and PABRA enabled stakeholders to learn new business models anchored in Deland-Led Seed Systems (DLSS) approach. **WP1** and **WP2** are also supported by Accelerated Varietal Improvement and Seed delivery of legumes and cereals in Africa (**AVISA**), (Southern Africa Accelerated Innovation Delivery Initiative (**AID-I**) Rapid Delivery Hub, and The Vision for Adapted Crops and Soils (**VACS**) projects in both scale and scope, covering additional geographies and cross-sharing innovations along impact pathways and market intelligence studies, as well as innovative business models. WP3 collaborates with **WP5** and **WP6** on policy development, certification standards in Kenya, and bilateral projects supporting VPC seed delivery. Several bilateral projects complement **WP3** in contributing to the delivery of EOIOs. The most important of these supported the practical delivery of VPC seed (**BASICS-II** for **cassava**, **SweetGains** for **sweet potato**), while the **PROSSIVA** project undertakes complementary research focused on innovations to address specific seed system bottlenecks in Ghana, Nigeria, Rwanda, Tanzania, and Uganda. Linkages with **WP7** address capacity development in humanitarian settings. **WP4** capacity-building activities are being executed in close collaboration with the

value-chain specific WPs (WPs 1, 2, and 3), and the new webinar series with all WPs and Initiatives such as Market Intelligence and Accelerated Breeding. **WP4** was recently awarded a competitive grant by **Ukama Ustawi Initiative** to scale up **VarScout**, a digital ecosystem for collecting, storing, monitoring, and visualizing crop varietal data by farmers, extension agents, government officials, private companies and researchers in Kenya. **WP5** is crosscutting, contributing to all EOIOs in collaboration with other WPs in India, Kenya, Nigeria, Rwanda, and Uganda. WP5 also collaborates closely with the **Market Intelligence Initiative** for evidence generation on varietal turnover, seed quality improvement, and market strengthening. Additional collaborations with the **Accelerated Breeding** and **Genebanks** Initiatives are expected to expand in 2024. **WP6** partners with projects such as **ClimatePRO** and **ICARDA** through **CWANA Regional Initiative** to engage women in rice and pulse seed production, respectively, with **WP3** on strategies for female farmers in Uganda, and with **WP2** for gender-disaggregated seed access data collection in six countries. **WP6** is also scaling the **Youth and Women Quality Center** model piloted by AVISA in Tanzania on groundnut and sorghum to additional countries and crops.

Seed Equal worked jointly with the **Accelerated Breeding** and **Genebanks** Initiatives in developing a CGIAR draft policy for licensing plant breeding products of CGIAR Centers for wide commercial use and with scaling and knowledge partners to develop and disseminate licensing tools to partner NARS. The work is also aimed at strengthening the multilateral system, particularly the International Treaty of Plant Genetic Resources in collaboration with **Genebanks**.

Seed Equal worked jointly with Fragility to Resilience in Central and West Asia and North Africa on the demand creation for newly released varieties of bread wheat, durum wheat, barley, chickpea, faba bean, and lentil in Egypt, Lebanon, Morocco, Sudan, and Uzbekistan.

Section 7: Adaptive management

RECOMMENDATION

SUPPORTING RATIONALE

Build continuity for Seed Equal (SE)/GI: SE/GI outcomes on increasing varietal turnover, reducing WAVA, increasing use of quality seed, and realizing genetic gains in farmers' fields linked to continuous product development pipeline need stability over time for testing, adjusting, and implementing.

Time is needed to implement and assess impact of the product (variety) development process, which includes product concept/market segmentation, product design, trait discovery, trait deployment, crossing/screening, early testing, late/on-farm testing, product registration, product launch, growth, and maturity (adoption). We just started a new cycle in 2022 aligned to CGIAR's 2030 Strategy with new research and development partners. The new research portfolio should ensure continuity to avoid losing new momentum and discouraging implementers and other key partners.

Increase feedback loop and synergy across Science Groups and Impact Areas.

Agronomic practices need to superimpose suitable varieties, and variety selection needs to be better aligned with breeding pipeline and market segment-driven approaches for the right replacement target setting. For example, direct-seeded rice is being scaled as a critical agronomic practice for climate change mitigation, but the strategy needs to link with fit-for-purpose varieties.

Support strong capacity-building programs to increase access to quality seed by women, men, and youth.

More demand-driven, partnership-based, MSPs, innovation networks, ToTs, field demonstrations, and other capacity-sharing activities that allow more technical and functional capability development and greater knowledge exchanges with partners need to be strengthened.

Build better branding—and communication—for SE by integrating more published evidence for reference and adopting a more aggressive external communication strategy, such as pitches on select scalable models we have developed.

CGIAR's unique position in seed systems lies in developing evidence-based and scalable seed systems approaches for use by other actors such as African Development Bank (AfDB), Technologies for African Agricultural Transformation (TAAT), NGOs, governments, and the private sector. These scalable solutions, backed by robust data along the development to delivery continuum, add a unique value to seed systems actors. We are enablers, catalyzing scaling by creating strategic linkages, developing and piloting business models, and facilitating the realization of genetic gains in farmers' fields.

Expand and intensify work on **public policy, regulation, and investment analysis** to increase the relevance and salience to national and regional actors to promote harmonization and trade.

Every WP works on some aspect of public policy, regulation, or investment. More systematic analysis and engagement on policy issues is required at all levels (especially the national level) and with a more diverse set of expertise and collaborators. We need key "account managers" to manage relationships with key regional and global partners such as ISF, APSA, and AGRA, among others, to ensure that they are fully engaged with CGIAR and creating mutually beneficial opportunities.

Implement work planning through the Scriptoria Program Management Platform (PMP) for GI to increase visibility of work plans and deliverables and improve alignment and collaboration across Centers, regions, WPs, teams, and other GI Initiatives.

SE staff often have insufficient visibility about their colleagues' work and progress, even within teams and Centers, resulting in missed opportunities for synergies, misalignment of work plans, and limited ability to provide oversight, identify issues, and take timely corrective actions. The PMP recently launched by GI is an opportunity to bridge those gaps and overcome those challenges.

Mainstream impact assessment in phase 2/P25 from design stage and budget at Initiative level.

Intellectual asset cost should be budgeted from day one of the Mega Project (MP) 5 (through pooled money), with practical plans for implementation. The approach used for the CGIAR Research Programs should be considered for all the MPs, rather than being developed retrospectively.

Adjust and implement annual planning and reporting in alignment with Initiative (or MP) **TOC as an adaptive management tool**.

Plan of work and budget (year n) and reporting for year (n-1) versus overall TOC alignment needs to be prepared through face-to-face meetings for increased communication among WPs. This would include revisiting and adjusting targets annually, rebalancing budgets, planning staff recruitment, and cross-WP adjustments, among other activities.

Section 8: Key result story

Demand-led approaches boost common bean access in Zambia



Sorting of beans in the Good Nature Agro store in Lusaka, Zambia. Credit: Paul Aseete

An innovative, market-focused model called DLSS, developed by PABRA, has been mainstreamed by the CGIAR Research Initiative on Seed Equal. The approach has significantly enhanced bean seed production in Zambia. EGS production surged by 221.4 percent, while certified and quality-declared seed production increased six-fold between 2021 and 2023. New varieties accounted for 88 percent of seed produced, improving varietal turnover. Additional effects included a 10.2 percent increase in bean grain production in 2023 and an 11 percent expansion in bean harvest area.

Beans are vital for households in Zambia and smallholder farmers' livelihoods rely on access to quality bean seeds. Now, a major shift in seed system collaboration is ensuring farmers can meet demand by accessing the best seeds available. The project demonstrates how new models supported by Seed Equal are helping smallholder farmers and improving access to nutritious food.

The DLSS approach developed by PABRA has been mainstreamed under Seed Equal. DLSS involves several key steps: defining and ranking bean varieties, investing in seed increase, catalyzing off-taker investment, conducting collaborative marketing campaigns, building capacity for seed producers, and fostering partnerships and coordination among various value chain actors through multistakeholder partnerships.

Applying this model has increased EGS production to ensure farmers can access high-quality seed of common bean varieties. The DLSS leveraged PABRA's existing, impactful, road-tested models, which initially segmented the value chain into production, distribution, and consumption hubs in 2015. Notably, the project introduced the concept of [bean corridors](#), which linked grain and seed production to market preferences through MSPs focusing on off-takers (entities that purchase beans or bean products from farmers or producers for further processing, distribution, or sale).

Through these strategic interventions, breeder seed production grew 24 percent, from 3.2 to nearly 4 tons, while pre-basic seed production surged from 13.4 tons in 2021 to 43 tons in 2022—a remarkable 221 percent increase. Certified and quality-declared seed production rose from 1,424 tons in 2021 to 8,381 tons in 2023—a six-fold increase. New varieties prioritized by off-takers and other scaling partners contributed to 88 percent of the seed produced

in 2023. The anticipated varietal turnover (the rate at which new varieties replace existing ones), currently predicted at 11.5 years, is expected to improve further with an increased share of new varieties.

Grain off-takers played a pivotal role in the success of seed production. They defined the leading market classes based on market demand, informed seed production decisions, and [guided the breeding pipeline](#). In implementing the DLSS approach, CGIAR's national partner Zambia Agricultural Research Institute and CIAT strategically collaborated with key players across the bean value chain, ensuring delineating roles for each participant, along with transparency. In 2022, the Initiative forged partnerships with six grain off-takers. Through these partnerships, off-takers were connected to several seed companies, which produce seed based on the demand created by grain off-takers.

Zambia saw a remarkable surge in bean production due to concerted efforts to enhance seed production, private sector investments, small-scale farmer training, policy influence supporting prioritized varieties, variety promotion, and strategic linkages. Bean production grew from 54,678 tons in 2022 to 88,095 tons in 2023. Furthermore, between 2021 and 2023, data from the Food and Agriculture Organization indicate a noteworthy 10.2 percent increase in bean production and an approximately 11 percent average national yield increase from 0.57 kg/ha. to 0.63 kg/ha. These positive changes can be partially attributed to enhanced production through access to and adoption of high-quality seed of better-yielding varieties.

By linking EGS production with bean corridors and grain off-takers, this demand-led system approach substantially improved seed availability and varietal turnover. This has enhanced the supply of common bean grain in Zambia. Effective collaboration among stakeholders, farmer training, and support is critical for sustaining this momentum.

Progress is not limited to Zambia. The International Institute of Tropical Agriculture is piloting the demand-led seed systems approach for cowpea in Nigeria, where it is showing tremendous potential for impact. The future of smallholder livelihoods and consumer access to better foods looks bright with this collaborative seed system approach.



The demand-led system approach can improve seed availability and variety turnover, and enhance common bean grain supply in Zambia, by linking early-generation seed production with bean corridors and grain off-takers.

Mwiinga Mulube, Plant Breeder and Agronomist, Zambia Agricultural Research Institute

Primary Impact Area



Other relevant Impact Areas targeted



Contributing Centers

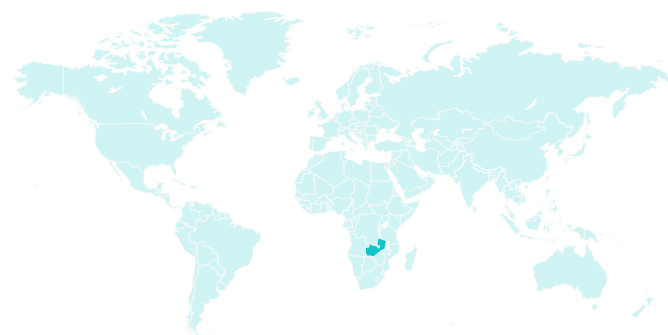
CIAT (Alliance) · Alliance of Bioersity International and CIAT · Regional Hub (International Center for Tropical Agriculture/Centro Internacional de Agricultura Tropical)

Contributing external partners

Makerere University · Zambia Agricultural Research Institute · Good Nature Agro · Blue Oak Agro · Vamara · Yanza Amansa · Standa · Comaco · Good Nature Agro-seeds · Afreseed · Kamano Seed Company · AMAC Seed Company · and Kariba Seed Company

The result builds on previous work by Improving Bean Production and Marketing in Africa, which was funded by Global Affairs Canada.

Geographic scope



Regions: Zambia



Front cover photo

Women farmers checking seeds of paddy varieties at a seed fair held in Bolangir, Odisha.

Credit: Devi Prasad Mahapatra (IRR)

Back cover photo

Seed demand estimation and business model tools developed by Seed Equal teams are helping partner like the Tanzania Agricultural Research Institute to improve the efficiency of their early generation sweet potato seed production.

Credit: James Legg (IITA)



INITIATIVE ON
Seed Equal