CGIAR Genetic Innovation Action Area: Theory of Change and Results Framework

December 2023

Overview

CGIAR's vision is a world with sustainable and resilient food, land, and water systems that deliver diverse, healthy, safe, sufficient, and affordable diets, and ensure improved livelihoods and greater social equality, within planetary and regional environmental boundaries. CGIAR recognizes that the pathway towards that vision will not be smooth. Instead, we will be confronted with recurrent and overlapping crises: in economics, politics, health, migration, water, biodiversity, environment and, above all, climate. Given this ever-faster pace of change, our task is to speed up innovation and to make sure that it has meaningful impact among the world's most a-risk: low-income producers and consumers. But many smallholder farmers are still growing varieties that are decades old – plants that cannot overcome the newest threats. Additionally, the methods that achieved the previous generations of improved varieties cannot sufficiently deliver the complex traits needed now. Therefore the key aim of Genetic Innovation is to accelerate adoption and turnover of improved crop varieties in farmers' fields.

CGIAR's Genetic Innovation Action Area works towards this aim and vision by collaborating closely with partners to:

- Identify local demand for diverse genetic resources and improved crop varieties and translate this market intelligence into strategies for genebanks and crop breeding that reduce poverty; increase gender equality; and improve nutrition, environmental health and climate solutions
- Conserve and future-proof crop genetic diversity as part of a global multi-partner system of genebanks
- Co-deliver trait discovery, breeding, field trials, and farmer testing of improved crop varieties
- Raise the performance of crop breeding networks through shared services, impact-driven management systems, innovation adoption, and capacity building
- Innovate in seed systems so that they deliver improved crop varieties to farmers more equitably and impactfully

The theory of change depends on all work being done within partnerships, particularly with national research and extension systems (NARES) and with small and medium enterprises (SMEs) active in the national breeding and seed sectors. A core focus is to raise the NARES-CGIAR-SME breeding networks' collective *strategic* and *operational* capacity to deliver a high rate of uptake and replacement in seed varieties among small-scale farmers in low- and medium- income countries.

Co-generated genetic innovations will be delivered as part of integrated solutions across CGIAR. Together with System Transformation and Resilient Agrifood Systems Action Areas for food, land and water systems, and through close cooperation with CGIAR's strategic partners, Genetic Innovation will enable progress on nationally defined pathways for development. Major effort will go into achieving affordable, accessible and fair benefits to low-income farmers, with particular emphasis on ensuring that research outcomes lead to greater equality for women.

Genetic Innovation will contribute across all five of CGIAR's Impact Areas, through maintenance of agrobiodiversity and through accelerated adoption by farmers of demand-driven improved crop varieties, delivered as part of integrated bundles of institutional and technical innovations that are designed to respond to priorities in partner countries.

The Vision

CGIAR's vision is a world with sustainable and resilient food, land, and water systems that deliver diverse, healthy, safe, sufficient, and affordable diets, and ensure improved livelihoods and greater social equality, within planetary and regional environmental boundaries. The Genetic Innovation Action Area is that crop diversity, improved crop varieties and well-functioning seed systems are at the heart of this wider vision for food, land and water systems.

The Challenge

CGIAR recognizes that the pathway towards the vision will not be smooth. Instead, we will be confronted with recurrent and overlapping crises: in economics, politics, health, migration, water, biodiversity, environment and, above all, climate. Given this ever-faster pace of change, our task is to speed up innovation and to make sure that it has meaningful impact among the world's most a-risk: low-income producers and consumers. In a time of escalating climate uncertainty, population growth, ecosystem degradation and growing demand for healthy and diverse diets, the world needs a coordinated, high-functioning system to conserve and use agricultural biodiversity.

Rapid uptake and replacement of crop varieties is fundamental to supplying the world's food and supporting millions of farmers and rural livelihoods. Farmers must face constantly changing market conditions, nutritional demands, and environmental constraints. Climate change is exacerbating the pace of change, in many cases towards conditions never before experienced by farmers. Farmers – and in turn consumers – need a steady supply of seed varieties that are demonstrably more productive, nutritious, and resilient than those they currently grow.

But many smallholder farmers are still growing varieties that are decades old – plants that cannot overcome the newest threats. Thus, the key aim of Genetic Innovation is to accelerate adoption and turnover of improved crop varieties in farmers' fields.

Furthermore, given the multi-dimensional challenges in food systems and farming today, genetic gain must be about more than yield increases in optimal conditions. Genetic gain in farmers' fields will increasingly be measured in terms of multiple, demand-led traits. These might include climate resilience (such as drought or heat tolerance), nutritional value (for example vitamin and mineral content enhanced through biofortification), value to women farmers specifically, and market traits valued by women and other consumers (such as better shelf life, taste, or cooking time), alongside the more well-known productivity and income-generation aspects.

The methods that achieved the previous generations of improved varieties cannot sufficiently deliver these more complex sets of traits needed now. The groups that serve small-scale farmers with genetic innovation – small and medium enterprises, national agricultural research and extension services, and CGIAR – all need to innovate themselves in order to improve their offer to farmers and consumers. For this reason, a core focus in Genetic Innovation is to raise the NARES-CGIAR-SME breeding networks' collective *strategic* and *operational* capacity to deliver a high rate of uptake and replacement in seed varieties among small-scale farmers in low- and medium- income countries.

Genetic Innovation Theory of Change

Use of the theory of change

Our theory of change is about how we work closely with partners to accelerate adoption and turnover of improved crop varieties in farmers' fields, leading in turn to greater benefits to a greater number of famers and consumers, while reducing inequalities and meeting environmental and climate challenges.

The theory of change is communicated as three interlinked components, which are all presented in the succeeding sections:

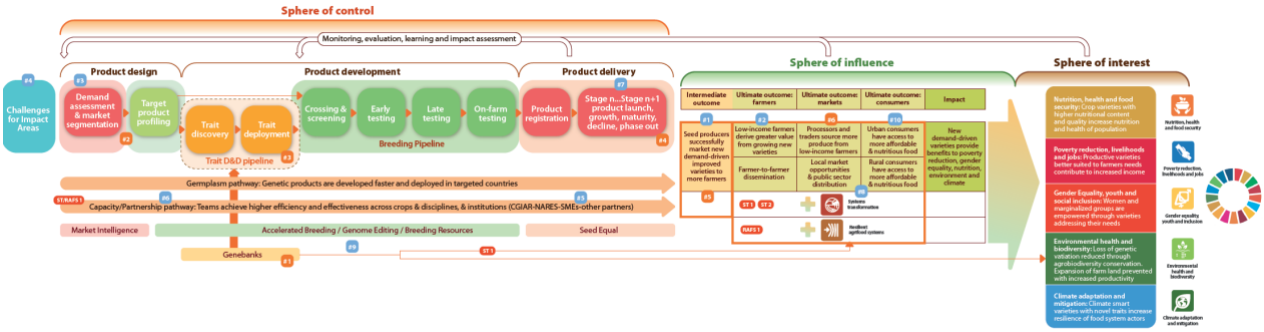
- A theory of change diagram – which can be examined at different levels of detail
- A set of six Genetic Innovation outcomes, each with indicators and targets (plus examples of four further outcomes in other Action Areas to which GI contributes)
- A set of ten testable assumptions

The ToC is a model of the overall change process to which Genetic Innovation aims to contribute. In our sphere of control is the research and supporting activities done by NARES-GIAR-SME networks, and the outputs produced. Those outputs are expected to influence other system actors to take specific actions (intermediate outcomes) that will in turn contribute to further changes (ultimate outcomes and impacts). For Genetic Innovation, we anticipate that outputs will contribute to two interlinked pathways for innovation: a germplasm pathway and a capacity/partnerships pathway. We understand innovation to be a multi-partner *process* as well as a set of new technical and institutional solutions.

We can monitor to see whether or not those outcomes are realized and assess whether and how CGIAR contributed. If the ToC proves to be more-or-less valid to end-of-initiative outcomes, it gives some confidence that higher level changes may also be realized. If impact indicators show positive changes in conjunction with the realization of outcomes as hypothesized in the ToC, we can make a plausible argument that the CGIAR contributed. If outcomes are not realized as hypothesized, the ToC provides a means to analyze why: poor delivery of outputs? context changed? wrong theory?

Our theory is captured by the set of ten assumptions, which are working hypotheses, or 'best bets', about how change happens, and about the motivations and behaviours of our beneficiaries, our partners and ourselves. For example, a central assumption is that strategic and operational capacity of breeding networks is a limiting factor in adoption and replacement in crop varieties among small-scale farmers (Assumption #6). This assumption underpins many of the activities in Genetic Innovation: improving market intelligence and targeting of breeding programs to meet local demand; sharpening coordination and hand-off among NARES, CGIAR and SMEs; optimizing management systems; investing in shared services and data tools; enhancing the global genebank system that links national, regional and worldwide assets; and working towards more effective functioning and regulation of seed systems. As we undertake this work, we need to keep testing this assumption in order to improve our ability to reach intended ultimate outcomes and impacts.

Theory of change diagram



Genetic Innovation outcomes

#1 Farmers, researchers, breeders and others worldwide access and use germplasm managed by genebanks, generating and sharing benefits equitably.

#2 NARES-CGIAR-SME breeding networks use market segments, product profiles and pipeline investment cases to orient variety development and deployment towards those that provide larger scale benefits across the 5 Impact Areas.

#3 National and private seed company breeding programs accelerate the development of varieties that provide larger scale benefits across the 5 Impact Areas.

#4 Integrated public and private seed systems increase the quantity of seed of improved varieties available to farmers in priority crops and geographies.

#5 Integrated public and private seed systems increase the rate of adoption by farmers of new varieties for priority crops and geographies.

#6 CGIAR partners develop and scale innovations that contribute to the empowerment of women, youth and other social groups in food, land and water systems.

Theory of change assumptions

#1 Small-scale farmers demand, and benefit from, wider choice in their seed supply, and frequent emergence of new improved crop varieties.

#2 Improved varieties are defined by genetic gains that contribute to farmer and consumer welfare and the public good, and are measured in terms of evidence of positive impact across five Impact Areas derived from adoption of these varieties. Genetic gains need to be measured in farmers' fields (realized genetic gain), not only in ex situ research settings (predicted genetic gain).[1]

[1] For technical details, see https://excellenceinbreeding.org/sites/default/files/manual/EiB-M2_Breeding%20process%20assessment-Genetic%20Gain_04-05-20_0.pdf

#3 Improved varieties will be more widely adopted if their product profiles (sets of traits) derive from partner demand and market intelligence in local contexts.

#4 The design of product profiles for improved varieties will deliver more impact if the starting point is all five Impact Areas, from which a selection of a subset of demand-driven traits is made, rather than starting from a single-trait or single-impact approach.

#5 NARES and SME partners are interested to partner in networks with CGIAR on the basis that these partnership platforms create greater innovation, efficiency and effectiveness in the design, development and delivery of new demand-driven varieties to low-income farmers.

#6 Raising the strategic and operational capacity of NARES-CGIAR-SME breeding networks will deliver a higher rate of uptake and replacement in seed varieties among small-scale farmers.

#7 Faster turnover of improved varieties in farmers' fields will increase and sustain genetic gains, particularly as climate change and other stresses and shocks accelerate change and uncertainty in growing conditions and market conditions.

#8 Private sector, public sector and informal seed systems all have a role to play in the supply of seed to farmers, with these roles differing by country and market segment, and addressing barriers and opportunities in seed systems will increase the efficiency, affordability and choice in supply of improved varieties to farmers.

#9 Genebanks contribute to genetic gains in farmers' fields both through uptake of genebank materials into NARES-CGIAR-SME breeding networks and through distribution into other research systems on a demand-driven basis.

#10 A more holistic, diversity-aware, transdisciplinary research approach will provide better analysis of users' needs and wants, leading to higher rates of genetic gain, varietal turnover and benefits accruing to women, youth and other historically disadvantaged social groups.

Impacts by 2030: the CGIAR Results Framework

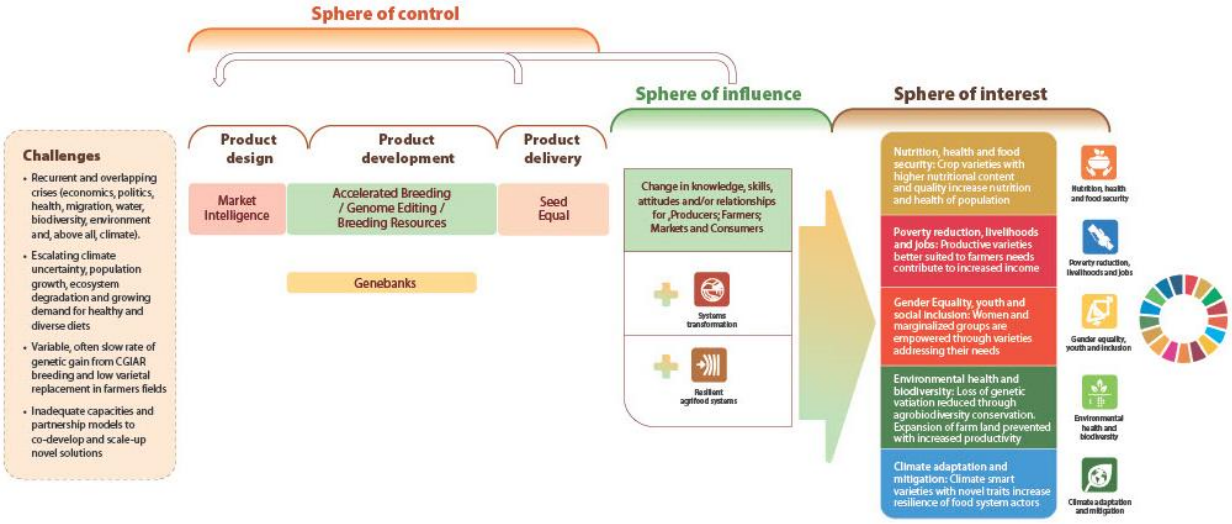
CGIAR will deliver relevant results into shared impact pathways, contributing science to inform system transformation in ways that achieve the sustainable development goals. CGIAR is targeting multiple benefits across five Impact Areas, aiming for net positive impact on: (i) Nutrition, health & food security; (ii) Poverty reduction, livelihoods & jobs; (iii) Gender equality, youth & social inclusion; (iv) Climate adaptation & mitigation; and (v) Environmental health & biodiversity. These benefits are closely linked to the SDGs, particularly SDG2 on Zero Hunger, but also SDG1: No poverty, SDG 3: Good health and wellbeing, SDG 4: Quality education, SDG 5: Gender equality, SDG 6: Clean water and sanitation, SDG 7: Affordable and clean energy, SDG 8: Decent work and economic growth, SDG 9: Industry, innovation and infrastructure, SDG 10: Reduced inequality, SDG 11: Sustainable cities and communities, SDG 12: Responsible consumption and production, SDG 13: Climate action, SDG 14: Life below water, SDG15: Life on land, SDG 16: Peace and justice strong institutions and SDG 17: Partnership to achieve the goals. For each of the five Impact Areas, CGIAR will contribute to collective global 2030 targets for transformation of food, land and water systems across local, regional and global levels. In support of these collective global targets, all CGIAR Initiatives will use common impact indicators to link their results in the spheres of control and influence to the five Impact Areas and SDGs.

Impact Area	Collective global 2030 targets	Proposed common impact indicators attributable to CGIAR
Nutrition, health & food security	End hunger for all and enable affordable healthy diets for the 3 billion people who do not currently have access to safe and nutritious food. Reduce cases of foodborne illness (600 million annually) and zoonotic disease (1 billion annually) by one third.	#people benefiting from relevant CGIAR innovations #people meeting minimum dietary energy requirements #people meeting minimum micronutrient requirements #cases communicable and non-communicable diseases
Poverty reduction, livelihoods & jobs	Lift at least 500 million people living in rural areas above the extreme poverty line of US $1.90 per day (2011 PPP). Reduce by at least half the proportion of men, women and children of all ages living in poverty in all its dimensions according to national definitions.	#people benefiting from relevant CGIAR innovations #people assisted to exit poverty
Gender equality, youth & social inclusion	Close the gender gap in rights to economic resources, access to ownership and control over land and natural resources for over 500 million women who work in food, land and water systems. Offer rewardable opportunities to 267 million young people who are not in employment, education or training.	women's empowerment and inclusion in the agricultural sector #women benefiting from relevant CGIAR innovations #youth benefiting from relevant CGIAR innovations #women assisted to exit poverty
Climate adaptation & mitigation	Implement all National adaptation Plans (NAP) and Nationally Determined Contributions (NDC) to the Paris Agreement. Equip 500 million small-scale producers to be more resilient to climate shocks, with climate adaptation solutions available through national innovation systems. Turn agriculture and forest systems into a net sink for carbon by 2050, with emissions from agriculture decreasing by 1 Gt per year by 2030 and reaching a floor of 5 Gt per year by 2050.	#tonnes CO2 equivalent emissions #plans with evidence of implementation #$ climate adaptation investments #people benefiting from climate-adapted innovations

Environmental health & biodiversity	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 a redistribution towards low-input farming system) 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.	#ha under improved management #km3 consumptive water use in food production #ha deforestation #Tg nitrogen application #plant genetic accessions available and safely duplicated

Reference: https://storage.googleapis.com/cgiarorg/2021/07/SC11-03b_CGIAR-Performance-and-Results-Management-Framework-2022-30_postmeeting8July2021.pdf

Genetic Innovation contributions to impact



Contributions to impact will be measured by impact assessments, both internal and independent, under the impact assessment strategies under development at Genetic Innovation level and under the auspices of CGIAR's Independent Advisory and Evaluation Services. This section briefly outlines the anticipated pathways to impact across the five Impact Areas, and how we will measure and incentivize contributions to impact.

Increased genetic gains and variety replacement will contribute to **Nutrition, health & food security,** first by improving accessibility and affordability of staple cereals, legumes, roots, tubers and bananas among low-income consumers. Product profiles that include biofortification (elevated zinc, iron, vitamin A content) and processing traits will contribute to improved nutrition, and will be targeted to address the specific micronutrient needs of children under the age of two, adolescent girls, and women.

Poverty reduction, livelihoods and jobs will be a central goal for the Action Area's genebanks, through equitable strategies for distribution and use, and breeding programs, through design of

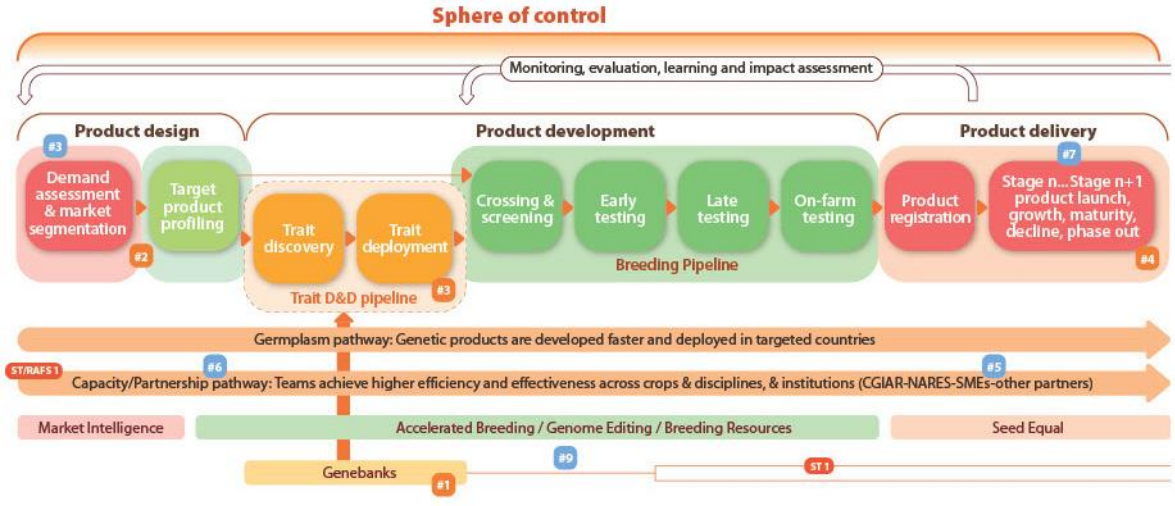
product profiles that raise productivity and returns to farmers in terms of land, labor and inputs. Seed systems research will include analyses of inclusive job and livelihood opportunities. Effects of poverty reduction through adoption of improved varieties on other Impact Areas such as gender equality, climate change adaptation and nutrition will also be analyzed.

Gender equality, youth & social inclusion will be addressed through product profiles that target the needs and preferences of women and other relevant social groups identified in target geographies. Once priorities are set and breeding processes are on-going, on-farm trialing will use gender-sensitive indicators and insights from gender analysis to adjust product profiles appropriately. Seed delivery pathways and scaling approaches will be intentionally designed to reach, benefit and empower women. Capacity development, choice of collaborators, and staff decisions will follow targets to pursue gender equality.

The Action Area will address **Climate adaptation & greenhouse gas reduction** through variety, parent and trait discovery. This focuses on achieving targets faster, and adapting to forecasted climate change impacts for specific crop-region combinations, such as drought, heat, flooding propensity, or changing disease and pest profiles. The generation of varieties that require less use of fertilizers and pest control chemicals, with more efficient water use and better adaptation to climate extremes, will reduce greenhouse gas emissions.

These resource-use efficiencies will also deliver on **Environmental health and biodiversity** by reducing environmental footprints at farm and landscape level. Genetic Innovation will work with Resilient Agrifood Systems and System Transformation to deliver improved varieties within bigger packages of interconnected technical and institutional innovations. A key goal of this 'innovation package' approach, to be co-developed with partners in all countries, is to couple productivity increases with incentives for sustainable agriculture (e.g. soil & water management, buffer zones) and landscape management (e.g. land use governance) to protect environmental health and biodiversity. Enhanced agrobiodiversity is also a critical outcome from Genetic Innovation, through the primary contribution of the Genebanks as well as the contributions of new varieties to sustainable agriculture.

Initiatives to deliver on the theory of change



The Genetic Innovation Action Area delivers against the GI intended impacts, outcomes and theory of change through four departments (Strategy Delivery and Scaling, Genebanks, Breeding Research Services and Plant Breeding and Pre-Breeding) managing six tightly connected Initiatives, with which the wider set of bilateral projects on plant breeding and seed systems will increasingly align.

The **Market Intelligence** Initiative works with local partners to provide participatory analyses of market demand to inform the target product profiles used by the breeding programs. These product profiles are informed by social differentiation among farmers and consumers, particularly around gender. They define traits for productivity, resilience, climate, environment, nutrition and consumers preferences.

The **Gene Banks** Initiative supports long-term conservation activities at international standards, develops improved protocols and practices to enhance efficiency and future-proof the genebanks and germplasm health units and works closely with partners to strengthen the global system.

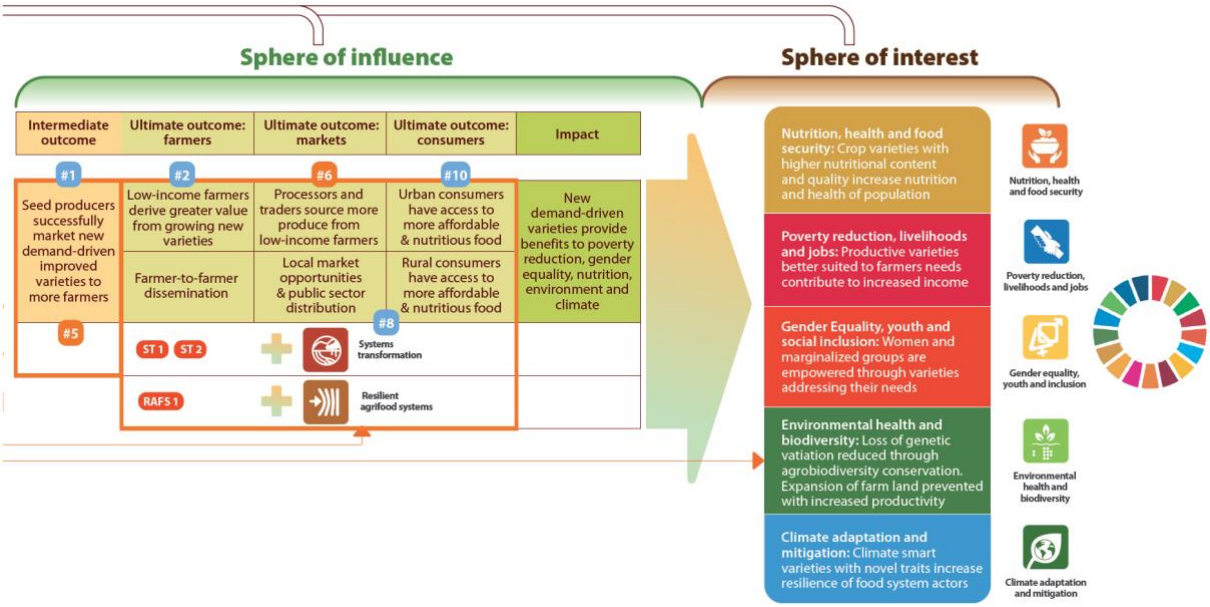
The **Accelerated Breeding** Initiative undertakes plant breeding and trait discovery. It works globally through strengthening NARES-CGIAR-SME breeding networks within each of CGIAR's crop-geography target areas.

The **Genome Editing** Initiative complements the Accelerated Breeding Initiative through research and partner networks to inform regulation, capacity development and use cases in countries where local demand is high.

The **Breeding Resources** Initiative builds the effectiveness and efficiency of all GI research through shared data management, analytics, genotyping and other services, as well as improving operational skills, practices, technologies and protocols.

Finally, the **Seed Equal** Initiative does research to enhance seed system and boost the adoption and turnover of improved seed varieties among women and men small-scale farmers, addressing both technical and policy accelerators.

Links across Action Areas



The Genetic Innovation Action Area will also build connections with the Action Areas on Systems Transformation and Resilient Agrifood Systems. This is shown in the ToC diagram by the series of shared objectives on: implementation partners actively engaging with farmers to implement transformation strategies (ST1), national and sub-national government agencies using research to implement strategies, policies and programs (ST2), NARES and other partners implementing agrifood system innovations (RAFS1), and multi-stakeholder platforms strengthened to become more effective and sustainable (STRAFS1). The key pathway for interaction across the Action Areas is that seed diversity and improved varieties will be delivered as part of integrated bundles of institutional and technical innovations in partner countries. In other words, the innovations from Genetic Innovation will arrive for farmers as part of a wider offer to support farms as rural businesses (e.g. solutions on agronomy, information, credit and so on), and as part of wider development strategies and programs at the national and regional levels.

To make this happen, key initial areas of collaboration are on agronomy and plant health (RAFS), on integrated climate modelling information and population nutrition analyses to inform product profiles, plus regulatory and licensing issues (ST), and on delivery of innovation within wider development agendas (Regional Integrated Initiatives).

Genetic Innovation Results Framework

This section presents the indicators and targets for The following outcomes will contribute to impact in each of the Impact Areas.

Outcome statement	ID	Indicator statement	Target 2024	Target 2030	Responsible Team
#1 Research institutions and government analytical units in the global south have improved access to data and capacity to develop tools and undertake research to support transformation of food, land and water systems.	1	Change in user requests to crop diversity	No decrease on 2022 reference	No decrease on 2022 reference	Genebanks
#2 One CGIAR-NARS-SME networks use market segments, product profiles and pipeline investment cases to orient variety development and deployment towards those that provide larger scale benefits across the 5 Impact Areas	2	Proportion of CGIAR germplasm-derived variety releases linked to a market segment and one or several impact areas	70%	100%	Accelerated Breeding
	3	Proportion of breeding pipelines within CGIAR-NARS-SME network using market segments, target product profiles to guide selection decisions for all advancement steps	60%	100%	Accelerated Breeding
#3 National and private seed company breeding programs accelerate the development of varieties that provide larger scale benefits across the 5 Impact Areas	4	Proportion of breeding pipelines that have implemented systems to measure predicted and realized genetic gains for farmer-relevant conditions	70%	100%	Accelerated Breeding
	5	Realized genetic gains in farmer-relevant conditions	Not applicable	Different targets by crop archetypes	Accelerated Breeding
#4 Integrated seed systems increase the quantity of quality seed of improved varieties available to farmers for priority crops and in	6	Quantity of quality seed produced and certified for a prioritized set of representative crops and countries	10 % increase on 2021 reference	50% increase on 2021 reference	Seed Equal

selected countries, geographies, and market segments					
#5 Seed system actors promote the adoption of quality seed of improved varieties by women and men farmers in selected countries , geographies, and market segments	7	Change in Weighted average varietal age (WAVA) in famers' fields for a prioritized set of representative crops and countries	5 % decrease on 2021 reference	25% decrease on 2021 reference	Seed Equal
#6 CGIAR partners develop and scale innovations that contribute to the empowerment of women, youth and other social groups in food, land and water systems	8	Proportion of women, youth who report input into productive decisions and mobility as a result of CGIAR innovations, capacity or policy outputs	Not applicable	70%	Market Intelligence
	9	Proportion of NARES-CGIAR-SME networks that have developed systems to measure adoption (with sex and age aggregation, using innovative and lower cost systems)	100%	Not applicable	Seed Equal

End of Initiative outcomes and indicators

Accelerated Breeding

EOI-Outcomes	**Indicators**	**Target 2024**
CGIAR-NARES breeding pipelines oriented towards specific market segments, enabling greater focus on farmers needs, drivers of adoption and impact	% of breeding pipelines oriented towards specific market segments	75%
CGIAR-NARES breeding pipelines use a revised organizational framework providing teams with operational clarity and effectiveness for pursuing breeding outputs.	% of breeding pipelines using improved organizational framework, motivated and empowered teams; transparent, metrics-driven, learning and evaluation	75%
CGIAR-NARES-SME breeding networks implement stronger partnership models where NARES and SMEs have increased contribution to the breeding process	% of CGIAR-NARES-SME breeding network implementing stronger partnership models	80%
CGIAR-NARES breeding pipelines are supported by discovery and trait deployment (TD&D) programs that deliver	% of breeding pipelines supported by a dedicated TD&D program	50%

high impact traits within elite parental lines		
CGIAR-NARES-SME breeding pipelines have increased the rate of genetic gains, providing seed system actors with farmer-preferred candidate varieties with step change in performance under farmers conditions.	% of breeding pipelines have increased the rate of genetic gains in the form of farmer-preferred varieties	70%

Reference: https://www.cgiar.org/initiative/01-accelerated-breeding/

Market Intelligence

EOI-Outcomes	**Indicators**	
Transdisciplinary teams across CGIAR and partners co-implement market and behavioral intelligence and co-design of target product profiles	Number of transdisciplinary teams empowered;	3
CGIAR and partners share institutional standards & market and behavioral intelligence	Number of standards and intelligence disseminated	10
Seed industry and NGOs use market and behavioral intelligence	Number of organizations using market and behavioral intelligence	5
Research leaders and investors make investment decisions in genetic innovation using GloMIP and the Investor Dashboard	Number research leaders and investors using GloMIP and Investor Dashboard	3

Reference: https://www.cgiar.org/initiative/05-market-intelligence-for-more-equitable-and-impactful-genetic-innovation/

Breeding Resources

EOI-Outcomes	**Indicators**	**Target 2024**
CGIAR and NARES breeding teams use shared services, facilities and operations that have been improved for greater throughput, accuracy and safety, at lower unit costs	#of breeding pipeline using the shared services	300
CGIAR and NARES services teams have up-to date knowledge and capacities to design and operate shared services, facilities and operations	Number of people trained to use the shared services	495
CGIAR and NARES breeding teams use state of the art data management systems	Number of users	982

Reference: https://www.cgiar.org/initiative/04-enabling-tools-technology-and-services-for-genetic-gains/

EOI-Outcomes	Indicators	Target 2024
Seed system actors promote uptake of quality seed of new improved varieties derived from breeding programs by women and men farmers in selected countries, geographies, and market segments	Change in Weighted average varietal age (WAVA) in famers' fields for a prioritized set of representative crops and countries	5%* decrease on 2021 reference
Governments, funders, researchers, extension services, and other seed system actors using new tools for monitoring varietal turnover and quality seed use.	Number of users disaggregated by: a) type (individual; organization; networks); b) tools c) crop d) country e) use level (interested; contributing with data; using data for decision making)	1,000 regular user
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	Number of Government's actively promoting policy solutions	3-4
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	Quantity of quality seeds produced and certified for a prioritized set of representative crops and countries	Different targets by crop and countries
Women, Men, youth, and disadvantaged socio-economic groups accessing affordable, quality seed of new improved market-demanded, nutritious, -producer-preferred, high-yielding, and climate-resilient varieties	# of people accessing CGIAR and NARS innovations (varieties) disaggregated by: type of user and country)	Different targets by crop and countries

Reference: https://www.cgiar.org/initiative/06-seedqual-delivering-genetic-gains-in-farmers-fields/

Gene Banks

EOI-Outcomes	Indicators	Target 2024

External diverse users increasingly access and use crop diversity, in perpetuity, benefitting from added value information and long term conservation, of in-trust collections	External users increasingly access crop diversity	No decrease on 2022 baseline
Genebanks monitor the use of genebank data and materials by breeding programs	System for monitoring use of genebank accessions in place	1
	Number of users of the subsetting tool	100 x year
National and international genebanks conserve and distribute Plant Genetic Resources for Food and Agriculture (PGRFA) more efficiently and reliably; in a strengthened global system, though capacity development and implementing enabling policies	Number of international policymaking bodies adopting decisions incorporating CGIAR contributions	3

Reference: https://www.cgiar.org/initiative/03-conservation-and-use-of-genetic-resources-genebanks/