



Rosita, age 3, with a cabbage seedling, Java, Indonesia. Credit: Ricky Martin, CIFOR


CGIAR Research Initiative on **Foresight**



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Disclaimers

This publication has been prepared as an output of the Foresight Initiative. Any views and opinions expressed in this publication are those of the author(s) and are not necessarily representative of or endorsed by the CGIAR System Organization.

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Table of contents

CGIAR Technical Reporting 2023

Section 1: **Fact sheet and budget**

Section 2: **Progress on science and towards End of Initiative outcomes**

Section 3: **Work Package progress**

Section 4: **Key results**

Section 5: **Partnerships**

Section 6: **CGIAR Portfolio linkages**

Section 7: **Adaptive management**

Section 8: **Key result story**

1

2

4

9

14

20

21

23

24

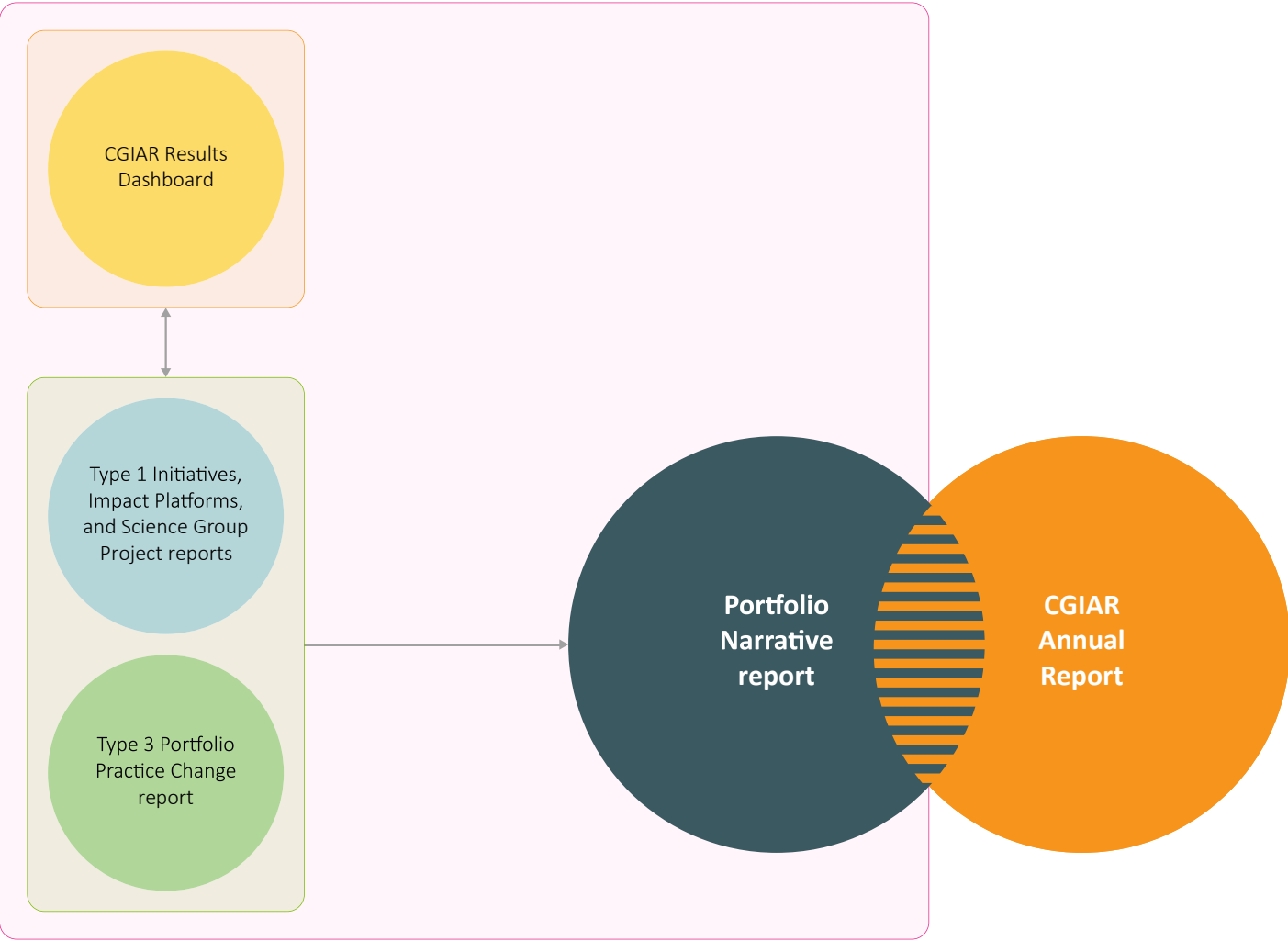
CGIAR Technical Reporting 2023

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	Foresight and Metrics to Accelerate Food, Land, and Water Systems Transformation
Initiative short name	Foresight
Initiative Lead	Keith Wiebe (k.wiebe@cgiar.org)
Initiative Co-lead	Elisabetta Gotor (e.gotor@cgiar.org)
Science Group	Systems Transformation
Start – end date	01/04/2022 – 31/12/2024
Geographic scope	Regions East and Southern Africa · South Asia · Global Countries Argentina · Bangladesh · Brazil · China · India · Indonesia · Kenya · Malawi · Nepal · Rwanda · South Africa · Zambia
OECD DAC Climate marker adaptation score ¹	Score 1: Significant The activity contributes in a significant way to any of the three CGIAR climate-related strategy objectives – namely, climate mitigation, climate adaptation and climate policy, even though it is not the principal focus of the activity.
OECD DAC Climate marker mitigation score ¹	Score 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 score ²	Score 1A: Gender accommodative/aware Gender equality is an objective, but not the main one. The Initiative/project includes at least two explicit gender specific outputs and (adequate) funding and resources are available. Data and indicators are disaggregated by gender and analyzed to explain potential gender variations and inequalities.
Website link	https://www.cgiar.org/initiative/foresight/

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

Addressing future challenges to food, land and water systems requires rigorous foresight analysis to understand interactions across multiple scales, trade-offs between goals, and options for achieving those goals. Yet most of the world’s foresight tools and data systems pay insufficient attention to developing countries. The CGIAR Research Initiative on Foresight is working with global and national partners to close this gap.

First, the Foresight Initiative is **maintaining and enhancing unique modeling and data systems** that allow state-of-the-art analysis of food, land and water systems in developing countries and across the world. These tools and data are international public goods that put CGIAR at the center of global foresight for food systems transformation. For example, the [SPAM](#) database tracks, at a pixel-scale, where crops are produced around the world; the [RIAPA](#) country models track how agrifood systems link to national economies and populations in over 30 countries; and the [IMPACT](#) model captures global agrifood systems and trade and interactions with natural environments and climate. In 2023, Foresight and its partners worked to ensure that CGIAR’s modeling systems reflect the latest understanding of the drivers of food, land and water systems transformation. Our ability to track and project outcomes across all five CGIAR Impact Areas was also enhanced.

Second, Foresight is **making modeling systems available and accessible to everyone**. This includes developing and disseminating documentation and software via the Initiative’s new Foresight Portal and other CGIAR and partner websites. Foresight also provides innovative training opportunities to strengthen the capacity of our partners to understand, use, and develop foresight tools. In 2023, this included seven in-person training workshops conducted together with our partner research networks in Africa and South Asia, and the launch of a new and innovative online training course targeting graduate students in Africa. Importantly, Foresight partnered with the National Policies and Strategies Initiative to conduct workshops in their eight focus countries and to support their training-of-trainers strategy.

Third, Foresight is **using modeling systems to conduct high quality research with partners to address major development and policy concerns**. Working with leading national, regional and global partners around the world (see Sections 3 and 5), Foresight is conducting research on the major drivers of food, land and water systems transformation. This includes analysis of climate, technological and dietary change in global and national agrifood systems. Foresight is partnering with national research centers in large developing countries to share capacity, incorporate their national perspectives, and foster cross-country exchange. Foresight also responds to demands for foresight and modeling analysis from government and other partners and responds to global shocks and food crises using the Initiative’s new Foresight and Rapid Response Modeling System (FARRMS). Having a dedicated research program with well-maintained modeling capabilities, coupled with flexibility to respond to unanticipated demands and crises, allows the Initiative to influence the global foresight agenda and produce high-quality research outputs while also being policy relevant, timely, and impactful.

Finally, Foresight is **communicating results** of joint analysis through ongoing engagement with governments, international organizations, funders and other partners as part of an iterative process to inform decision-making about the future of food systems through enhanced knowledge, trust, and ownership of foresight analysis and findings by our partners at national, regional and global levels.

	2022	2023	2024
	↘	↘	↘
PROPOSAL BUDGET ▶	\$8.40M	\$9.33M	\$10.27M
APPROVED BUDGET ¹ ▶	\$6.70M	\$8.10M ²	\$5.37M ³

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

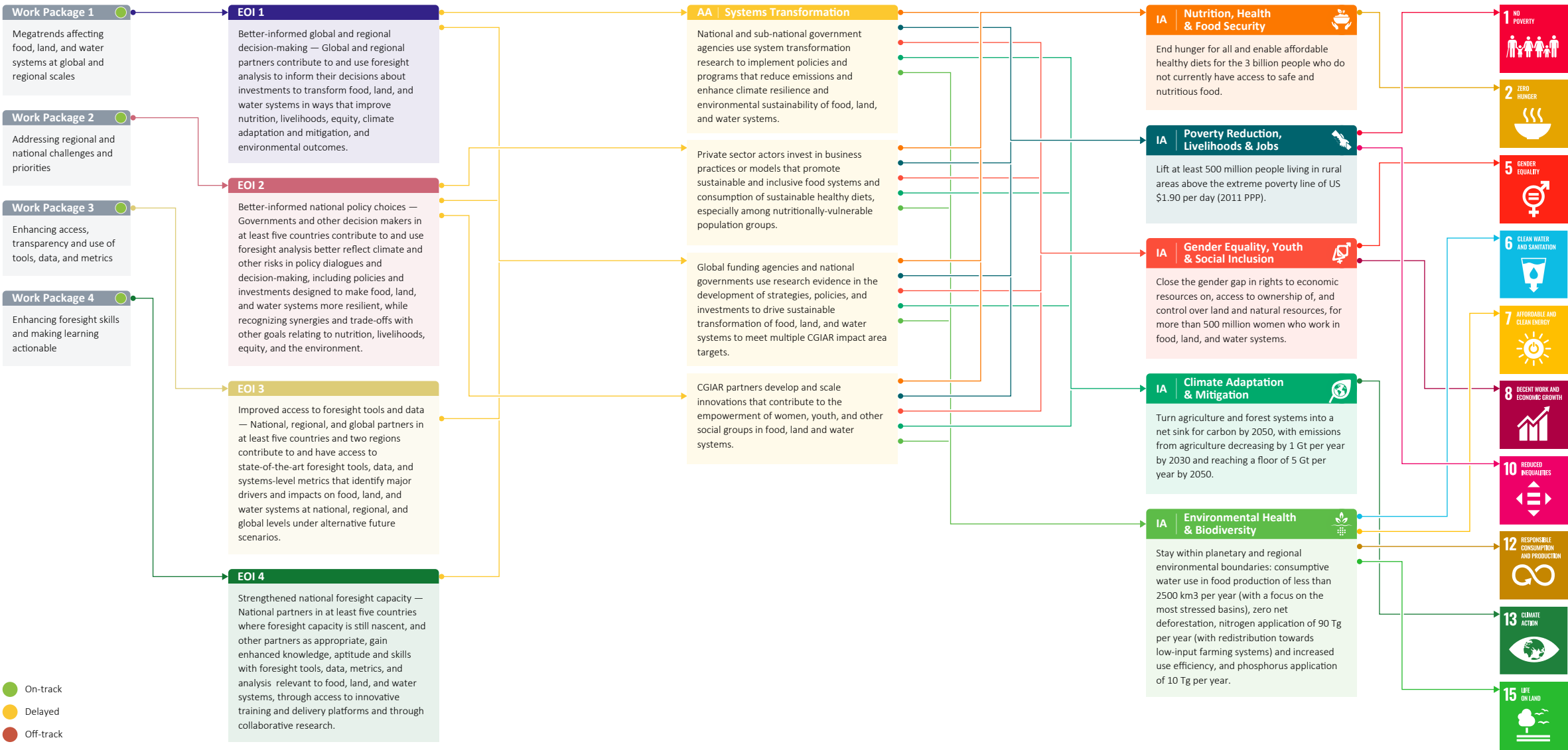
² This amount includes carry-over and commitments.

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

Section 2: Progress on science and towards End of Initiative outcomes

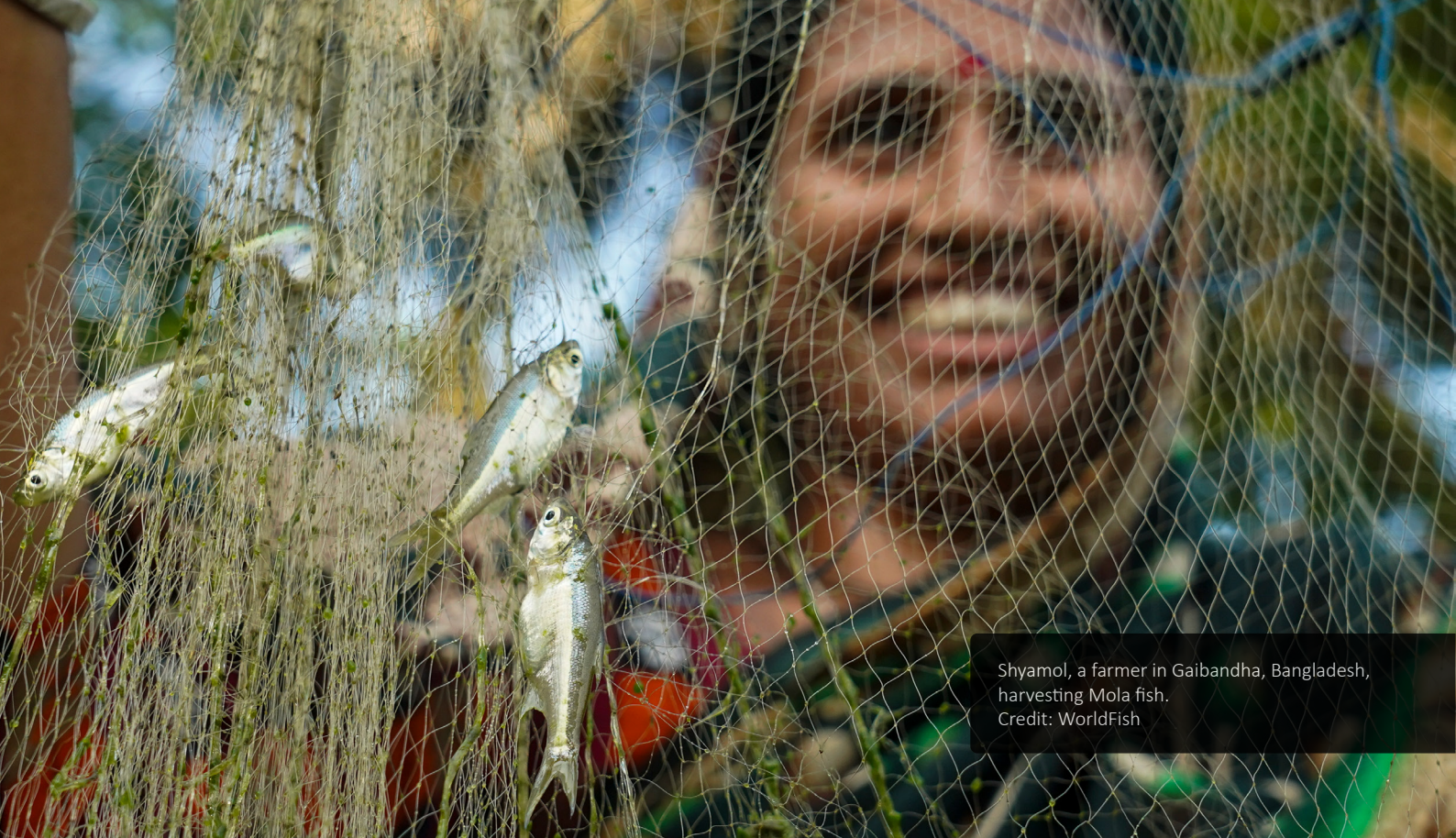
Initiative-level theory of change diagram

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.



Shyamol, a farmer in Gaibandha, Bangladesh, harvesting Mola fish.
Credit: WorldFish

Summary of progress against the theory of change

Addressing future challenges to food, land and water systems requires rigorous foresight analysis to understand interactions across multiple scales, trade-offs between goals, and options for achieving those goals. Yet most of the world's foresight tools and data systems pay insufficient attention to developing countries. As a result, many policy decisions affecting the world's poor and malnourished populations and the resources they manage are made without the benefit of rigorous analysis of emerging challenges and policy trade-offs. Moreover, as food, land and water systems transform, as linkages to global markets strengthen, and as climate change and other challenges become more pressing, the drive towards more comprehensive and sophisticated foresight tools is accelerating, leaving developing countries further behind. The Foresight Initiative is working with global and national partners to close this gap through four key actions that jointly contribute to the five CGIAR Impact Areas and multiple Sustainable Development Goals (SDGs).

First, the Foresight Initiative is maintaining and enhancing unique modeling and data systems that allow state-of-the-art analysis of food, land and water systems in developing countries and across the world. These tools and data are international public goods that put CGIAR at the center of global foresight for food systems transformation. For example, the [SPAM](#) database tracks, at a pixel-scale, where crops are produced around the world; the [RIAPA](#) country models track how agrifood systems link to national economies and populations in over 30 countries in Africa, Asia and Latin America; and the [IMPACT](#) model captures global agrifood systems and trade and interactions with natural environments and climate. In 2023, Foresight and its partners worked to ensure that CGIAR's modeling systems reflect the latest understanding of the drivers of food, land and water system transformation. This included incorporating the latest climate projections from the Intergovernmental Panel on Climate Change, expanding our ability to model extreme climate events and global market disruptions, and updating the drivers of technological change and productivity growth based on information from CGIAR Centers. Our ability to

track and project outcomes across all five CGIAR Impact Areas was also enhanced.

Second, Foresight is making modeling systems available and accessible to everyone. This includes developing and disseminating documentation and software via the Initiative's new Foresight Portal and other CGIAR and partner websites. Foresight also provided innovative training opportunities to strengthen the capacity of our partners to understand, use, and develop foresight tools. In 2023, this included seven in-person training workshops conducted together with our partner research networks in Africa and South Asia including participants from 17 countries, and the launch of a new and innovative online training course targeting graduate students in Africa. Importantly, Foresight partnered with the CGIAR Research Initiative on National Policies and Strategies to conduct workshops in their eight focus countries and to support their training-of-trainers strategy. More information on capacity strengthening is provided in our Key Result Story in Section 8.

Third, Foresight is using modeling systems to conduct high quality research with partners to address major development and policy concerns. Working with leading national, regional and global partners around the world (see Sections 3 and 5), Foresight is conducting research on the major drivers of food, land and water systems transformation. This includes analysis of climate, technological and dietary change in global and national agrifood systems. Foresight is partnering with national research centers in large developing countries to share capacity, incorporate their national perspectives, and foster cross-country exchange. Foresight also responds to demands for foresight and modeling analysis from government and other partners and responds to global shocks and food crises using the Initiative's new Foresight and Rapid Response Modeling System (FARRMS). In 2023, the Initiative analyzed El Nino impacts in Eastern and Southern Africa; assessed the compounding effects of the recent pandemic and global food crisis; and supported the design and prioritization of national agricultural investment plans in four African countries. Having a dedicated research program with

well-maintained modeling capabilities, coupled with the flexibility to respond to unanticipated demands and crises, allow the Initiative to influence the global foresight agenda and produce high-quality research outputs while also being policy relevant, timely, and impactful.

Finally, Foresight is communicating results of joint analysis through ongoing engagement with governments, international organizations, funders and other partners as part of an iterative process to inform decision-making about the future of food systems through enhanced knowledge, trust, and ownership of foresight analysis and findings by our partners at national, regional and global levels.

The Foresight Initiative also encountered several challenges in 2023. Among these were uncertainty in the amount and timing of funding,

and adverse impacts of that uncertainty on the establishment of new partnerships, some of which were ultimately delayed until 2024. Another challenge involved managing scope. Foresight as an activity covers a vast scope, and indeed the entire CGIAR Portfolio of Initiatives conducts foresight in various ways on particular topics related to the future of food systems. Within that broad scope, the Foresight Initiative focuses on links across diverse thematic areas, interactions across scales, and trade-offs between goals and Impact Areas, looking months to decades into the future. The Initiative necessarily focuses on selected topics, goals, and geographies – to the exclusion of others. This requires managing expectations while being responsive to partners' demands.

These and other areas of progress, challenge, and response are described further in Sections 3 to 8 below.

Progress by End of Initiative outcome

EOIO 1: Better-informed global and regional decision-making.

Foresight continues to develop and enhance cutting-edge tools for analysis of global and regional food system challenges, opportunities and tradeoffs, including the IMPACT and SPAM modeling systems and databases. Foresight uses these international public goods to support better-informed decision-making for food system transformation at global and regional scales, including for the Asian Development Bank, the World Bank and other international financial institutions, and funding partners including the Bill & Melinda Gates Foundation (BMGF) and the US Agency for International Development (USAID). Foresight does this by working closely with leading national research institutions in Africa, Asia and Latin America (including the Chinese Academy of Agricultural Sciences, the Indian Council for Agricultural Research, and their counterparts in Brazil, Argentina, Indonesia and South Africa) as well as leading global research institutions (including the University of Oxford, the Massachusetts Institute of Technology, Cornell University, and Wageningen University).



Palm nut fruits or areca nut at the farm at Lubuk Beringin village, Bungo district, Jambi province, Indonesia. Credit: Tri Saputro, CIFOR

EOIO 2: Better-informed national policy choices.

Foresight is continually enhancing state-of-the-art country-level analytical tools, including the RIAPA and FARRMS modeling systems, to respond to partners' demands for high quality policy modeling analysis related to prioritizing investment plans and assessing climate risks affecting national agrifood systems. First, governments in three focus countries requested and are contributing to national climate vulnerability assessments using CGIAR foresight modeling and data systems. Second, governments in four countries requested and/or are using CGIAR modeling analysis to support national agricultural development plans. Third, Foresight and its national partners are completing studies on past and future drivers of agrifood system transformation. These studies are already informing decision-making by governments and donors. Finally, Foresight's agrifood system and household level metrics on hunger, diets, incomes, and employment are being used to inform policies and track transformation at national and global scales.

EOIO 3: Improved access to foresight tools and data.

Foresight is improving access to foresight tools and data through our openly accessible GitHub repository for open-source code for foresight-related models and tools and through the innovative [Foresight Portal](#). The material also comes with documentation to ensure transparency. The documentation includes scientific publications and user guides on foresight models, data, and metrics. The Foresight Portal also provides access to new and enhanced metrics for foresight analysis and novel tools to access and visualize data and metrics. Foresight data and results have also been shared directly with United Nations agencies, international financial institutions, funders, other CGIAR Research Initiatives (including National Policies and Strategies and Market Intelligence), and research partners around the world.

Through the community of practice discussion forum on the Foresight Portal, we have created a means to interact with users and solicit feedback to ensure demand-driven updates to the material provided through the portal.

Foresight is collaborating with national partners through research networks such as the Africa Network of Agricultural Policy Research Institutes (ANAPRI) to provide opportunities for analysts in at least nine countries to enhance knowledge, aptitude and skills with foresight tools, data, metrics, and analysis relevant to food, land, and water systems. This is achieved through direct, instruction-led training, channeled via the Initiative’s Work Package 2 (on national policies) as well as using innovative online training. The online training course, now moving from design to roll-out stage, is increasing access to foresight analysis beyond the individuals, institutions, networks and countries with which Foresight has established formal capacity-sharing collaborations. While participants from at least six countries attended in-person training events in 2023, the beta testing cohort of the online training course included participation from five countries in Africa and elsewhere.

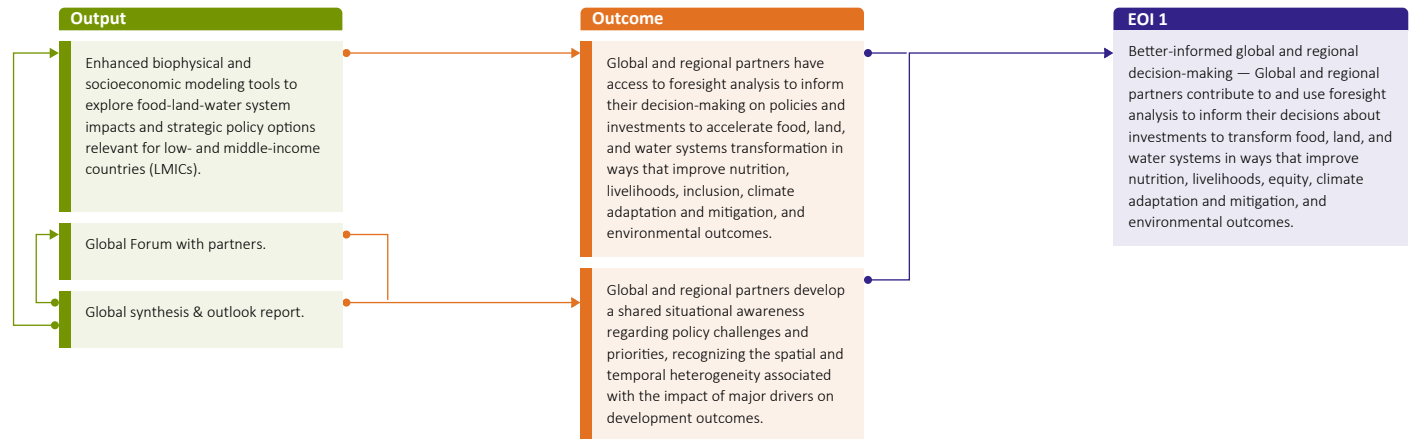


Data is collected from farmers to help them make decisions about trade-offs to boost income and improve production, while also reducing GHGs through improved forages.
Credit: ©CIAT/GeorginaSmith

Section 3: Work Package progress

WP1: Megatrends affecting food, land, and water systems at global and regional scales

On track



Work Package 1 progress against the theory of change

Work Package (WP) 1 develops and applies cutting-edge analytical tools, including the IMPACT and SPAM modeling systems and databases, and works with leading research institutions around the world to analyze the major biophysical and socioeconomic trends affecting – and affected by – food, land, and water systems at global and regional scales over the next several decades. WP1 pays particular attention to interactions between Impact Areas and regions, which in turn shape the complex choices faced by decision-makers in the countries that are the focus of WP2.

In 2023, we engaged with key strategic partners including the Asian Development Bank, the World Bank, BMGF, the Food and Agriculture Organization of the United Nations (FAO), the United Nations Environment Programme (UNEP), and the USAID, including during the [2023 Foresight Partnership Forum](#) in Nairobi (Output 1.2.3). We also interacted with the Independent Science for Development Council in relation to their work on megatrends.

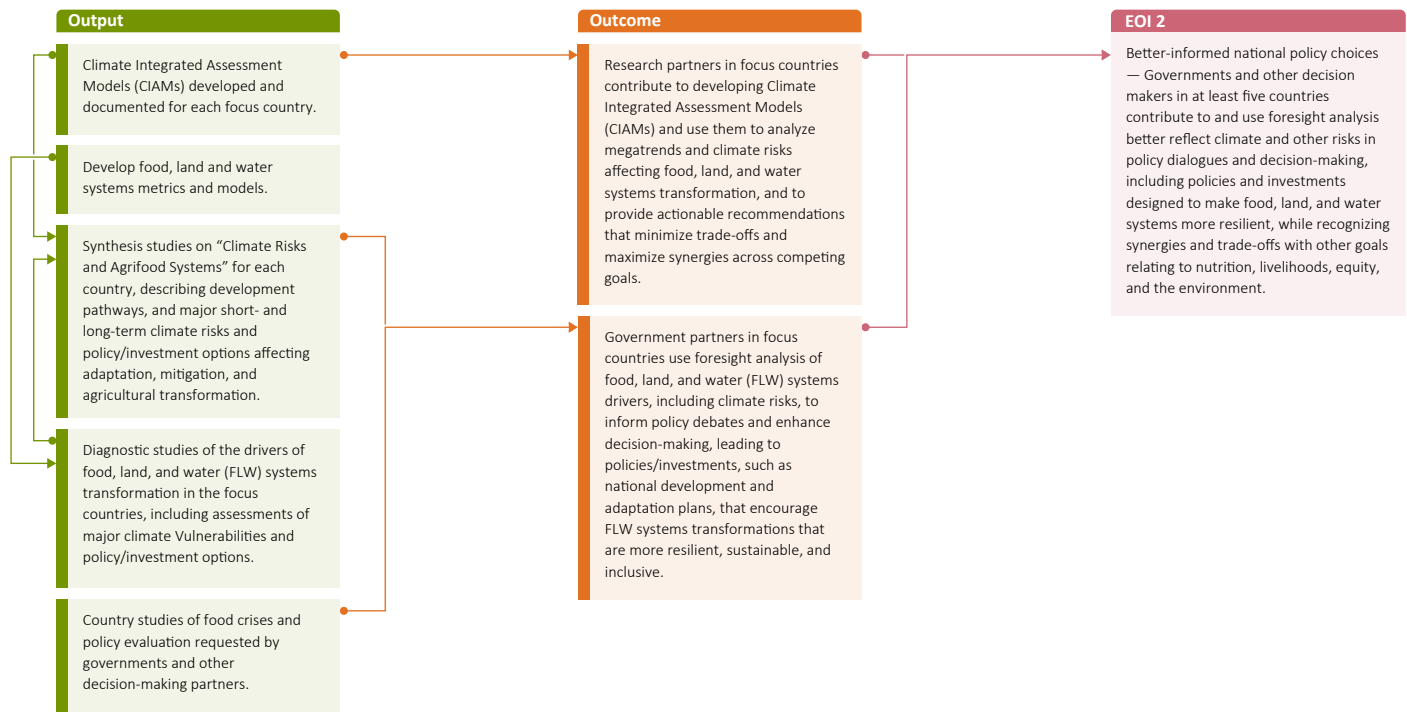
In response to demand from partners, we invested in enhancing biophysical and socioeconomic data and analytical tools, including

the International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT), which enable us to examine changes in land, water, climate, diets, pests and pathogens, and other factors more accurately. This innovation in turn improves understanding of food, land, and water system impacts and policy options relevant for low- and middle-income countries (Output 1.1.2). A multidisciplinary team of scientists from 11 CGIAR entities and several partner institutions contributed to this key output.

We also continued our series of briefs on the state of foresight analysis on major changes that will affect food, land, and water systems over the next several decades. In 2023 these focused on the future of FLW systems in key regions ([West and Central Africa](#), [Central and West Asia and North Africa](#), and [Southeast Asia](#)), resources ([land](#)), shocks ([El Nino](#)), commodities ([aquatic foods](#), [rice](#), and [pulses](#)), and Impact Areas ([gender equality](#)). This collection will feed into a global synthesis report (Output 1.2.1) highlighting synergies and trade-offs across the five CGIAR Impact Areas.

WP2: Addressing regional and national challenges and priorities

On track



Work Package 2 progress against the theory of change

WP2 develops and applies state-of-the-art analytical tools, including the RIAPA and FARRMS modeling systems, to examine the drivers of food, land, and water systems transformation and inform decision-making at the country level. In 2023, the focus broadened from Africa to South Asia and to more demand-driven policy research.

The [country agrifood system diagnostic studies](#) are in their final stages. Research partners in the six focus countries are completing studies on the drivers of agricultural growth, and agrifood system transformation studies were completed and published for 20 countries. Consolidated country reports will be jointly published with partner institutions. The global agrifood system database was updated and expanded to include income and sex-disaggregated employment data for 2000-2021. Future databases will include new metrics on agrifood system greenhouse gas emissions and water use.

Climate integrated assessment models (CIAMs) were developed and piloted in the focus countries. The Malawi pilot study on "[Climate](#)

[Risks and Agrifood Systems](#)" was presented to government and research partners and led to new training and research activities with the national planning and finance ministries. Similar government engagement, research collaboration, and training activities are planned for the other focus countries (Output 2.3). [Model databases](#) were updated and published for six countries ([see Kenya example](#)) and the climate analysis has been completed for all African countries. This allows Foresight to conduct climate risk analysis and respond to policy demands beyond the current focus countries.

A rapid response study of [El Nino's impacts on national food security](#) was conducted. Deep-dive analysis with Malawi's planning commission led to [joint publications](#) and [media outreach](#). Ongoing demand-driven studies include (1) assessing poverty and food security impacts of ongoing conflict in Sudan; (2) evaluating Kenya's proposed tax reforms' impacts on agrifood systems; and (3) informing national agricultural investment plans in Ethiopia, Rwanda, and Tanzania.

WP3: Enhancing access, transparency, and use of tools, data, and metrics

On track



Work Package 3 progress against the theory of change

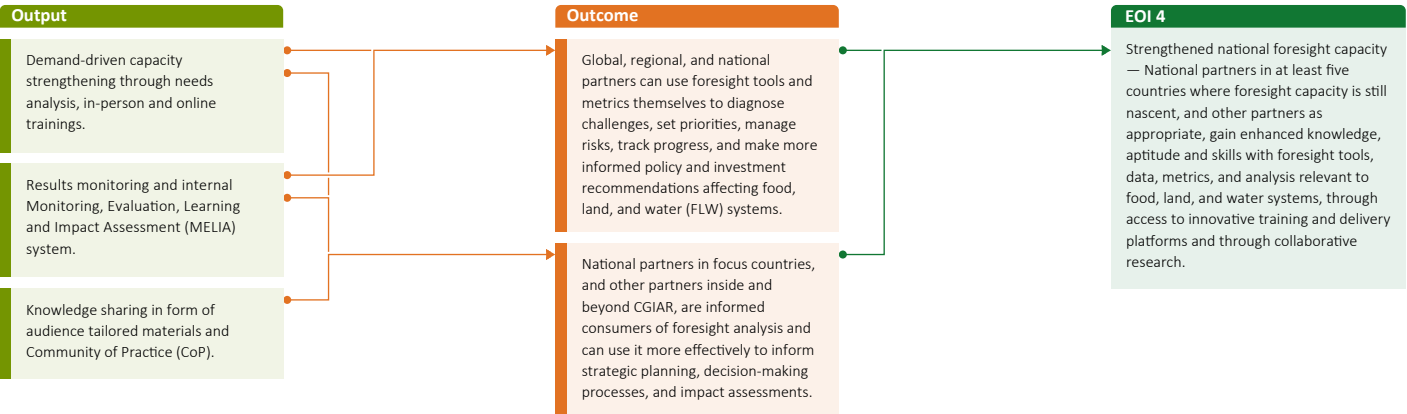
WP3 contributes to the dissemination of international public goods by enhancing access to CGIAR's core foresight models and tools to help governments and researchers, particularly in developing countries, conduct foresight analysis amidst increasing complexity in food, land, and water systems. In 2023, WP3 continued to generate improved and updated documentation of foresight models and tools such as multiplier analysis and the open ontology-agnostic Interoperable Information Asset Metadata Schema ([OIMS](#)). WP3 generated data and metrics-related documentation on various social accounting matrices. In terms of new and improved metrics for tracking changes across food, land, and water systems, WP3 added data for multiple countries to the innovative Uber H3 Level 6 Hexagons Database for characterization of sub national units for key countries. WP3 also supported the development of open access tools for generating new and improved metrics including the tool for extracting climate data ([Clim2Agri](#)); OIMS related JSON

scripts. WP3 supports the development of better data visualization tools to allow better understanding of the data and metrics by analysts and decision-makers. This includes the [Shiny application](#) for consulting climate data online. More tools are in the final stages of development.

Furthermore, WP3 maintains an accessible online portal for foresight tools and training materials, currently undergoing renovation based on stakeholder feedback and aligned with CGIAR standards. The technical architecture, including UX aspects, is designed with input from communication experts to ensure alignment with CGIAR branding. 2023 saw the pre-launch of the [foresight portal](#) with some content, as well as the Foresight portal WordPress theme code (available for others to use) and a [staging site for the portal](#) with Foresight portal content at the final stages of development. The novel content includes a discussion forum for the community of practice on foresight.

WP4: Enhancing foresight skills and making learning actionable

On track



Work Package 4 progress against the theory of change

Outputs 4.1.2 & 4.2.2 (Demand-driven capacity strengthening): Foresight helps partners use the latest available data and analytical tools to analyze the food system challenges confronting them and options to address them. Foresight’s ANAPRI training program is implemented together with the [Bureau for Food and Agricultural Policy](#) (BFAP) and supports a large ANAPRI-led project, [Policy and Investment Prioritization through Value Chain Analysis](#) (PPVC). These training programs equipped African analysts with foresight tools to help governments prioritize policies and investments. The Foresight team offered training in Value Chain Analysis, Partial Equilibrium Modelling, and Computable General Equilibrium (CGE) modelling. The “Ambassador” training programs included 100 online participants and in-person “Affiliates” training programs involved 28 professionals (10 women and 18 men) across different educational levels. Three training sessions took place overall. Aligned to these in-person and virtual trainings, the online Economic Modeling training modules 1 and 2 were developed and soft launched with a first cohort of 15 beta testers (five women and 10 men) with diverse educational/work backgrounds and locations in Africa.

Outputs 4.1.6 & 4.2.6 (Results monitoring and internal MELIA system): The [Foresight Monitoring Tool for Adaptive Management and Learning](#) was enhanced in three key areas: 1) adaptation of the theory of change based on insights from the 2022 Reflect process; 2) integration of the annual budget for assessing value-for-money by output; and 3) enriched collaboration details to track scientists’ locations, delivered results, and collaborations. In 2024, emphasis will be on enhancing interoperability with other systems that will support scaling the related [innovation](#) with other Initiatives.

Output 4.2.4 (Knowledge Sharing): The Foresight community of practitioners brings together about 100 colleagues (roughly 40 percent of whom are women) from all CGIAR Centers, national research institutions, and implementing agencies through quarterly virtual meetings. Meetings include presentation of exciting new work, followed by small group discussions and exchange. WP4 is also working with WP3 to embed a community of practitioners platform into the Foresight Portal to facilitate further interaction between members. Team members also shared knowledge through professional meetings, including the International Rice Congress and the Agricultural and Applied Economics Association meetings.

Work Package progress rating summary

WORK PACKAGE	PROGRESS RATING & RATIONALE
1	<div></div> Progress rating Progress was made in all output/outcome areas. Improvements in data and tools are underway; an advisory committee was established to help steer the modelling improvements. Numerous research outputs have already been published. The first Foresight Partnership Forum was held in January 2023 and the second will be held in Kathmandu in April 2024.
2	<div></div> Progress rating Progress was made across all output/outcome areas in focus and other countries. The Work Package is responding to demand for climate and policy modeling analysis from government and national partners to inform their decision-making. Training and research programs with local partners are progressing well.
3	<div></div> Progress rating The foresight portal was delayed in 2022 but is now well underway, increasingly capturing accessible, transparent foresight models, tools, data, metrics and other resources, and helping partners access the latest available data and analytical tools.
4	<div></div> Progress rating The major components of this Work Package, namely in-person and online training opportunities, community of practitioners, and the monitoring evaluation and learning system, are in place and being adapted to the needs identified in the pause and reflect sessions.

Definitions

<div></div> On track	<div></div> Delayed	<div></div> Off track
<div>✓</div> Annual progress largely aligns with Plan of Results and Budget and Work Package theory of change.	<div>⚠</div> Annual progress slightly falls behind Plan of Results and Budget and Work Package theory of change in key areas.	<div>✖</div> Annual progress clearly falls behind Plan of Results and Budget and Work Package theory of change in most/all areas.
<div>✓</div> Can include small deviations/issues/delays/risks that do not jeopardize success of Work Package.	<div>⚠</div> Deviations/issues/delays/risks could jeopardize success of Work Package if not managed appropriately.	<div>✖</div> Deviations/issues/delays/risks do jeopardize success of Work Package.

Section 4: Key results

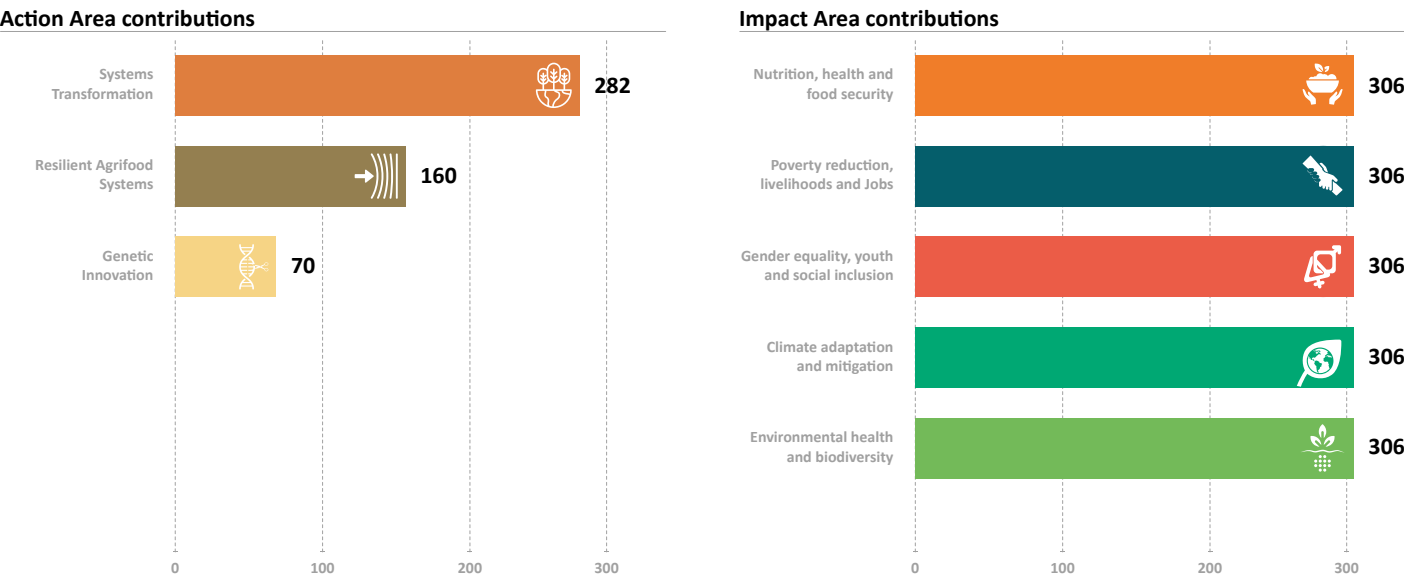
This section provides a cumulative overview of the results reported by the CGIAR Research Initiative on Foresight spanning the years 2022 and 2023. These results align with the CGIAR Results Framework and Foresight’s theory of change. Further information on these results is available through the CGIAR Results Dashboard. Source: *Figures extracted from the [CGIAR Results Dashboard](#) on 9 April 2024.*

OVERVIEW OF REPORTED RESULTS



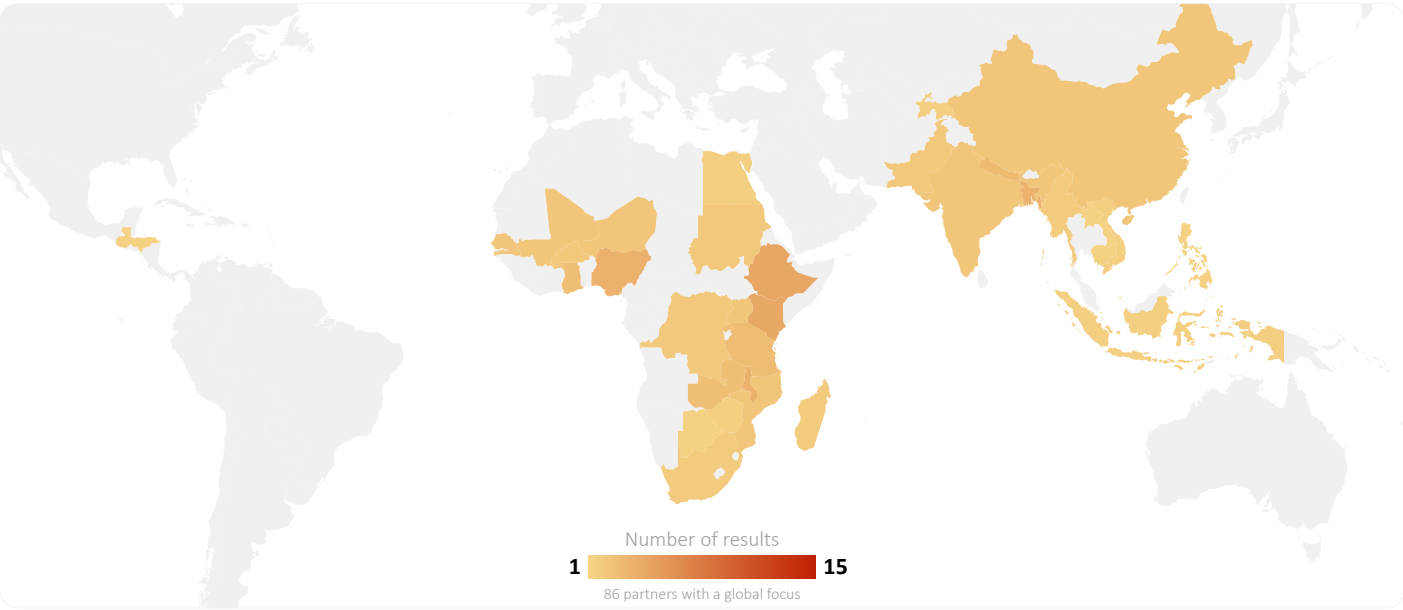
Rather than targeting specific policy changes, Foresight seeks to inform how tens of thousands of decision-makers around the world understand their situations and outlooks and make better decisions today to arrive at improved food systems in the future. It does this through innovation in analytical tools, making those tools accessible, strengthening the capacity of partners, and high-quality collaborative research. Foresight produced a total of **306 results**, including 223 knowledge products, 23 innovation developments, and 16 capacity sharing for development results. Out of 17 SDGs, and 169 targets, Foresight contributed to 15 SDGs and 89 targets in 2023.

ACTION AREA AND IMPACT AREA CONTRIBUTIONS

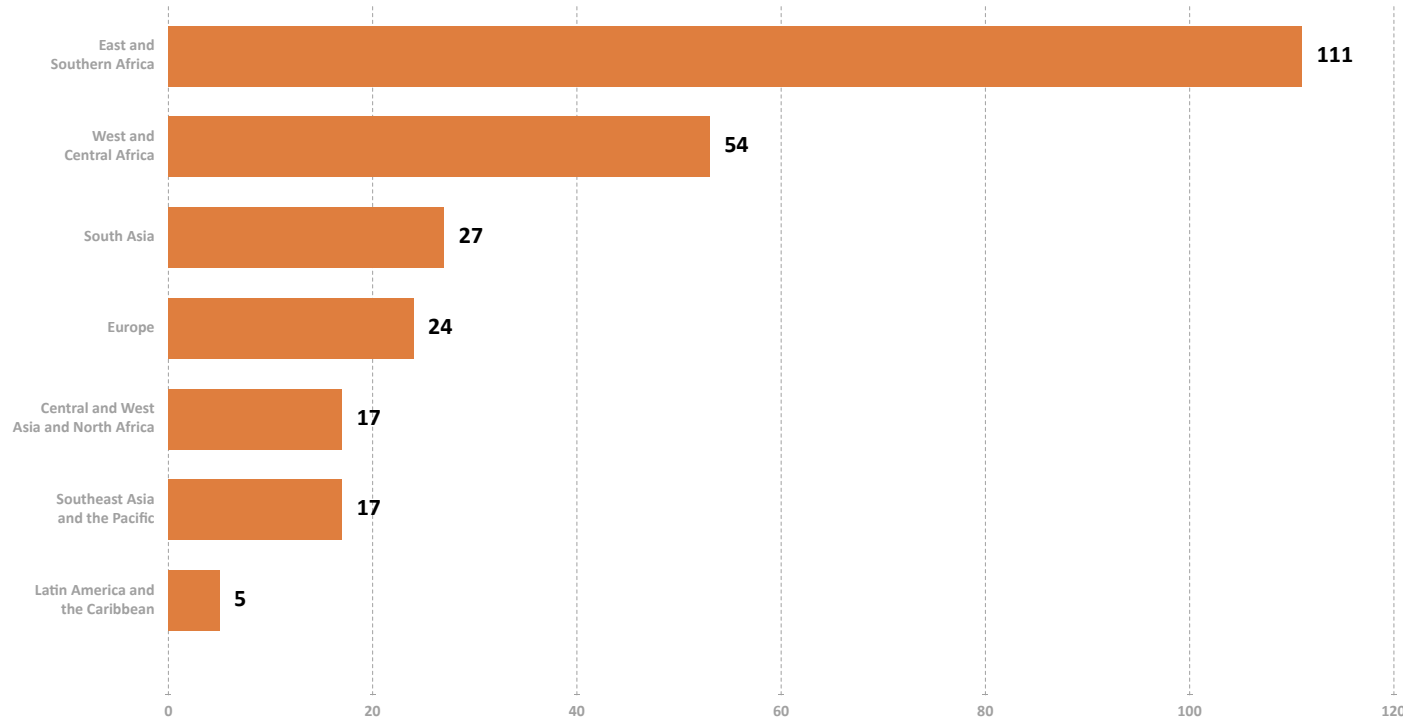


Foresight’s **contributions** focus on Systems Transformation but also extend to Resilient Agrifood Systems and Genetic Innovation. Reflecting our focus on interactions across food system challenges, regions, and impacts, Foresight contributes to all five Impact Areas.

GEOGRAPHIC DISTRIBUTION OF REPORTED RESULTS

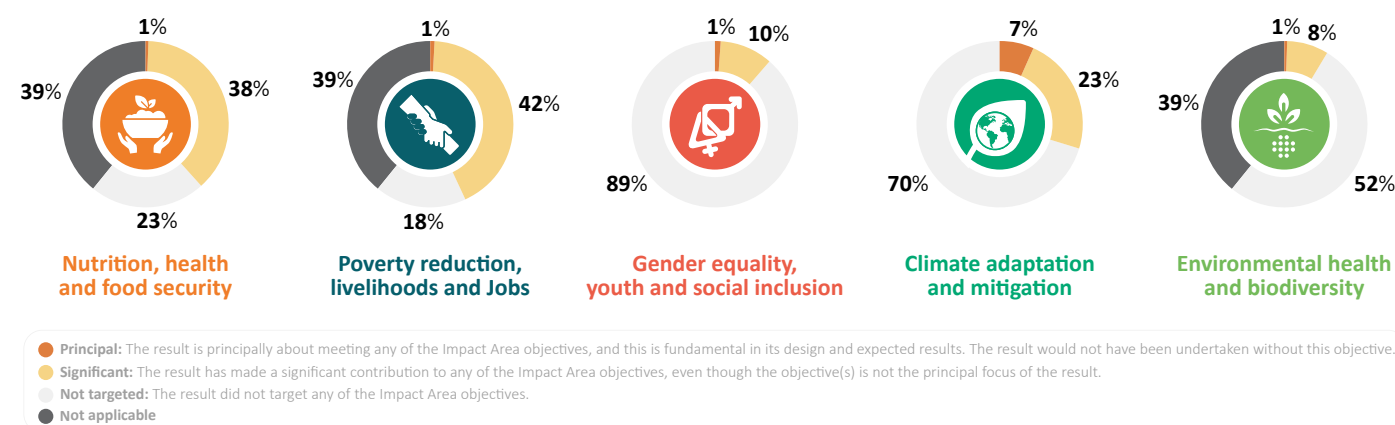


NUMBER OF RESULTS BY REGION



Results reflect our **regional focus** in East and Southern Africa and South Asia, including our six focus countries in those regions, and our global work. Engagement in these regions includes capacity strengthening, joint analysis, co-creation of knowledge products, and dialog to inform decision-making.

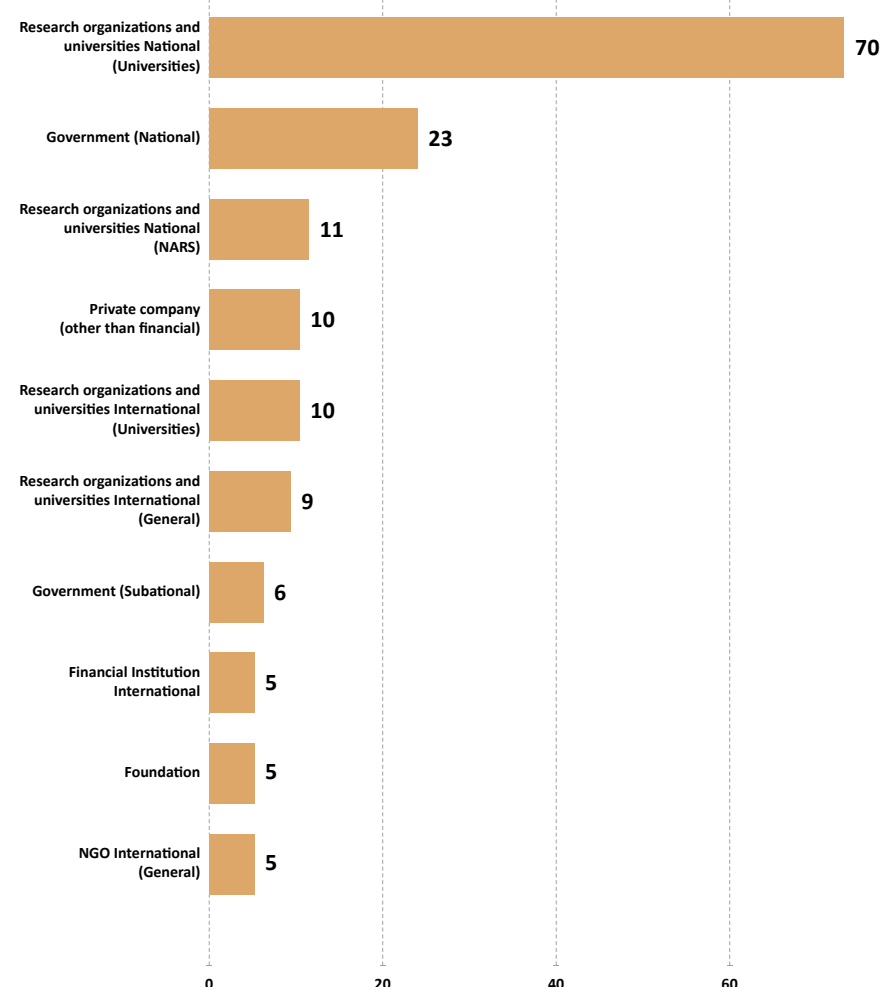
PERCENTAGE OF RESULTS TAGGED TO CGIAR'S IMPACT AREAS



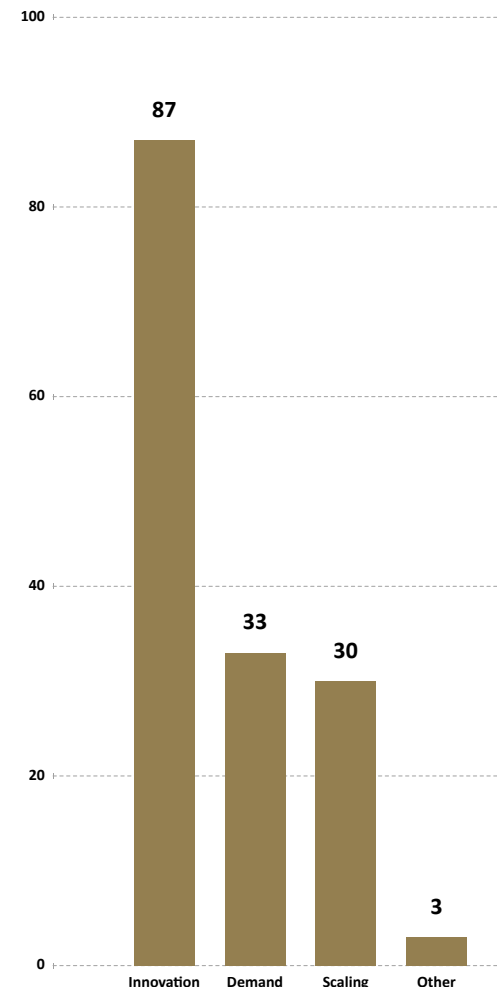
Foresight's work addresses all five of CGIAR's **Impact Areas**, with a particular focus on poverty and nutrition. Much of Foresight's work also includes an explicit focus on climate change, including modeling impacts of long-term climate change and shorter-term climate variability on productivity, prices, and food security. An increasing share of our work includes an explicit focus on gender and inclusion, including model-based evaluations of employment and social protection programs targeting women in Africa.

NUMBER OF EXTERNAL PARTNERS THAT COLLABORATED IN DELIVERING FORESIGHT RESULTS

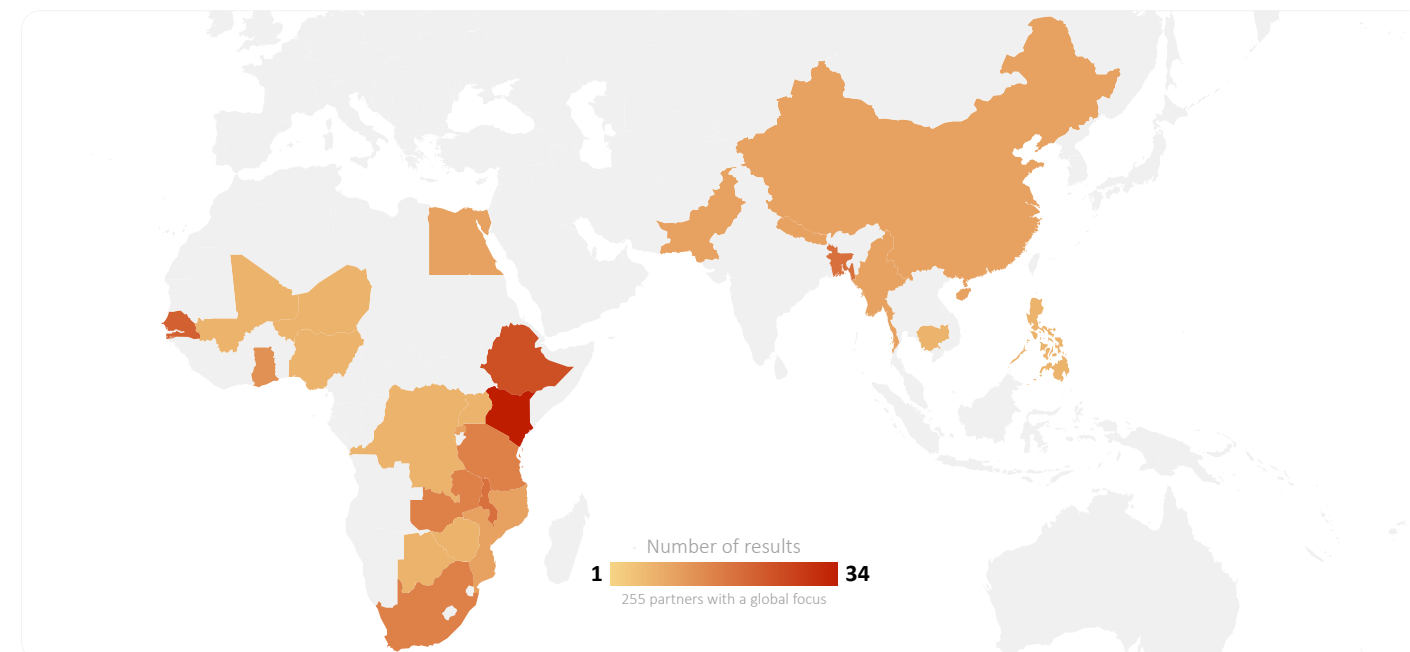
Results by partner type



Results by partner delivery type



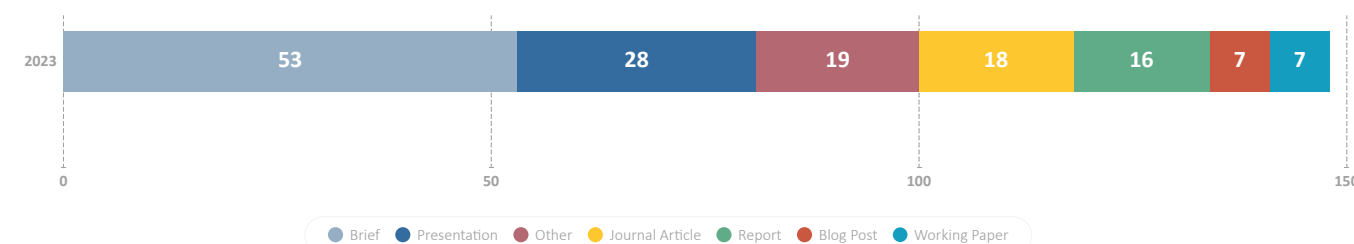
NUMBER OF EXTERNAL PARTNERS THAT COLLABORATED IN DELIVERING FORESIGHT RESULTS



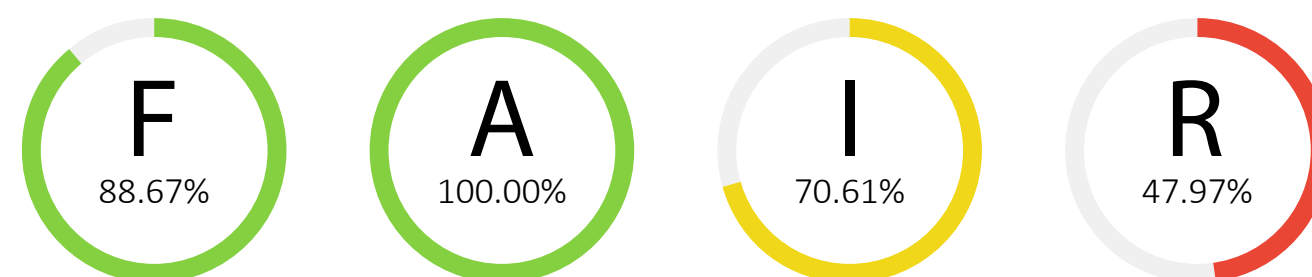
Foresight **partners** with policy research institutes closely connected to national governments in 18 countries in Africa and South Asia. In 2023 we expanded our partnership network to include leading agricultural research institutions in key regional economies across the global south, namely China, India, Indonesia, South Africa, Brazil, and Argentina.

KNOWLEDGE PRODUCTS BY TYPE

Foresight reported 187 results in 2023, of which 148 were knowledge products. Reflecting our commitment to improving access to foresight data, modeling tools and results, almost all were findable and accessible, and most were also interoperable and reusable.



FINDABLE, ACCESSIBLE, INTEROPERABLE AND REUSABLE (FAIR) SCORES

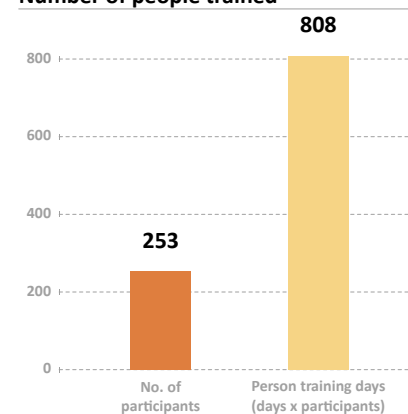


FAIR scores refer to a set of principles that support the reusability of digital assets. FAIR (Findability, Accessibility, Interoperability, and reusability) scores are calculate based on the presence or absence of metadata in the CGSpace repository. [CGIAR open and FAIR Data Assets Policy](#)

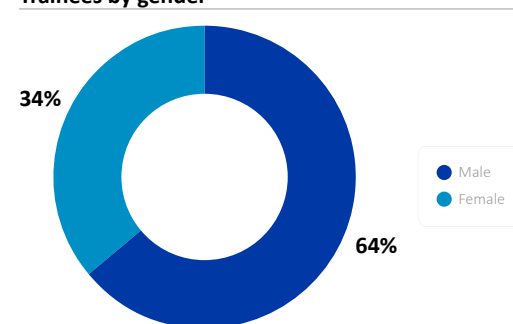
Foresight reported 187 results in 2023, of which 148 were knowledge products. Reflecting our commitment to improving **access** to foresight data, modeling tools and results, almost all were findable and accessible, and most were also interoperable and reusable.

CAPACITY SHARING

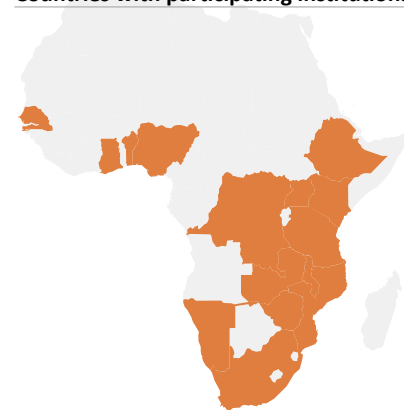
Number of people trained



Trainees by gender



Countries with participating institutions



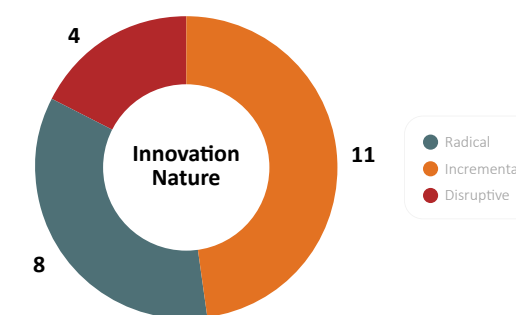
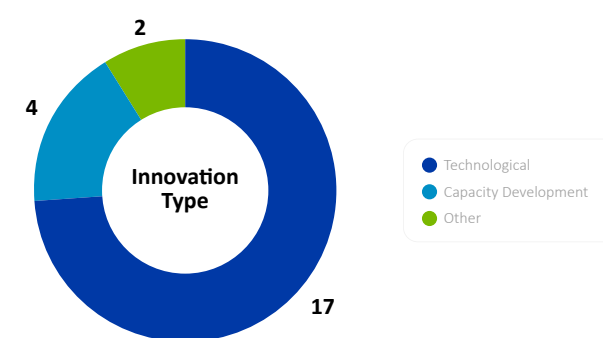
As part of its program of capacity sharing for development, Foresight conducted seven training events in 2023, providing a total of 808 person-days of training to participants from 17 countries in Sub-Saharan Africa.

NUMBER OF INNOVATIONS BY READINESS LEVEL

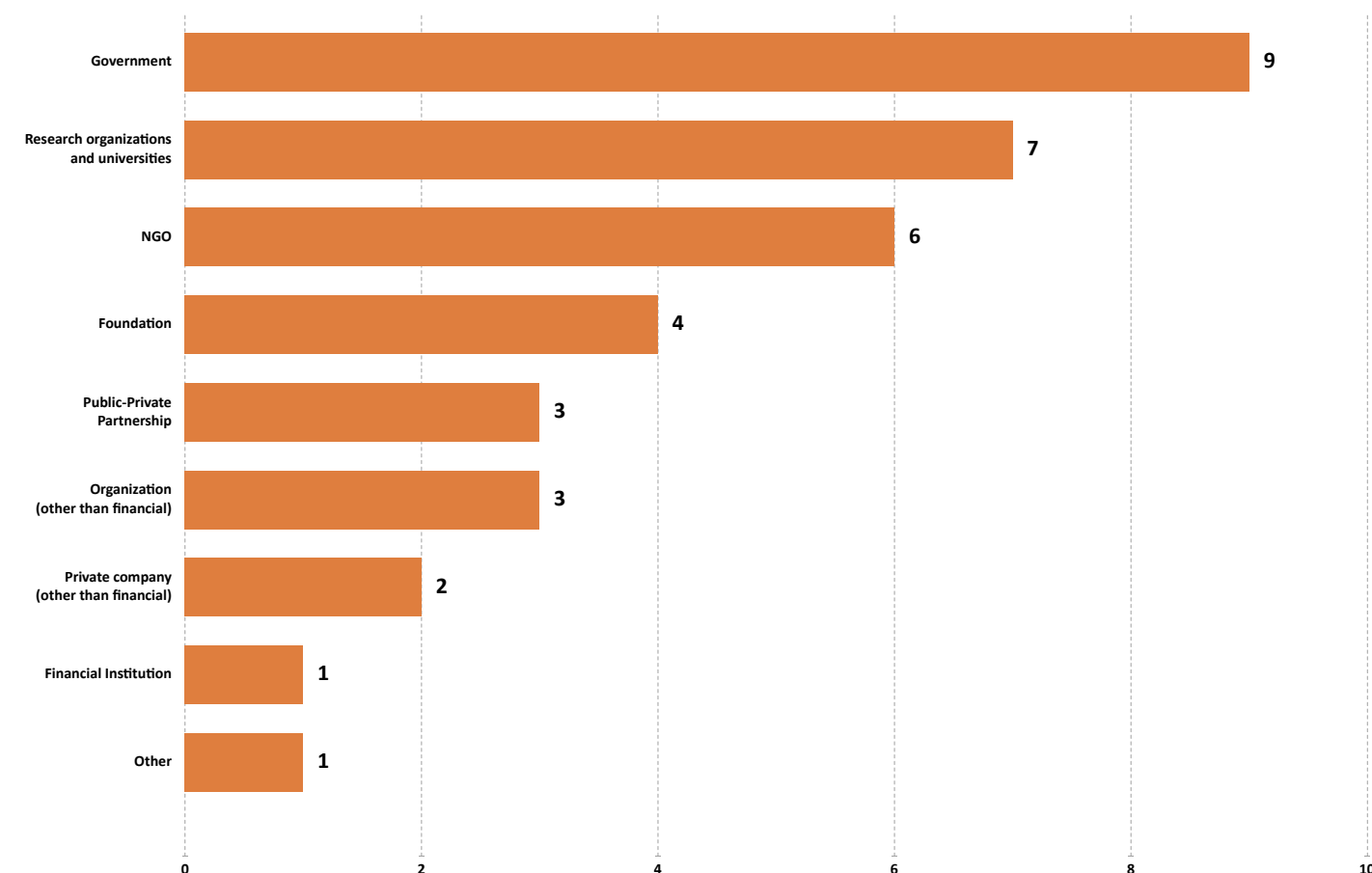


In 2023, Foresight submitted 15 **innovations** and contributed to five more developed in collaboration with other CGIAR Research Initiatives (two with Market Intelligence, one with Digital Innovation, one with Sustainable Healthy Diets, and one with Diversification in East and Southern Africa). Of this total of 20 innovations, six were at early stages (up to proof of concept), 11 were at intermediate stages (up to prototype), and two were proven innovations. (In addition to results formally reported as innovations, we note that innovations are taking place throughout the Initiative's activities – in engagement, in capacity sharing, in data and models, in analysis, and in communication of results.)

INNOVATIONS BY TYPE AND NATURE

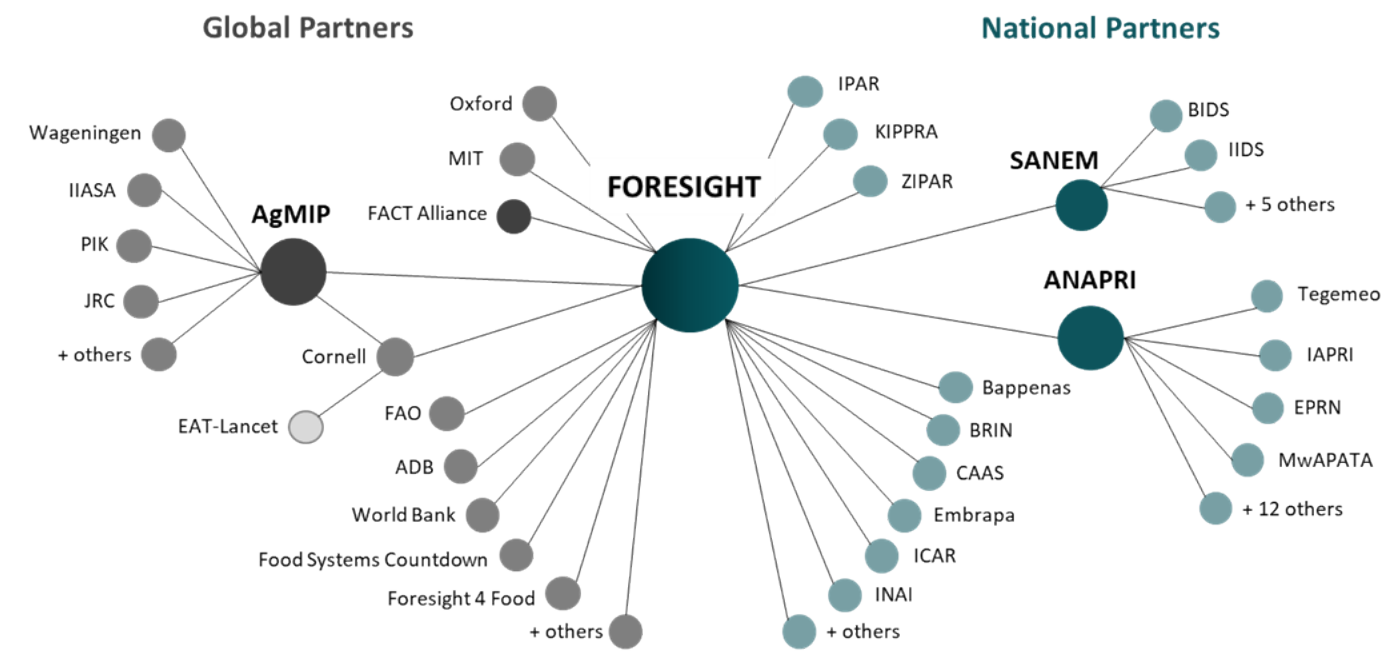


INNOVATION USERS BY INSTITUTION TYPE



Section 5: Partnerships

FORESIGHT’S PARTNERS



Source: Prepared by the Foresight Initiative

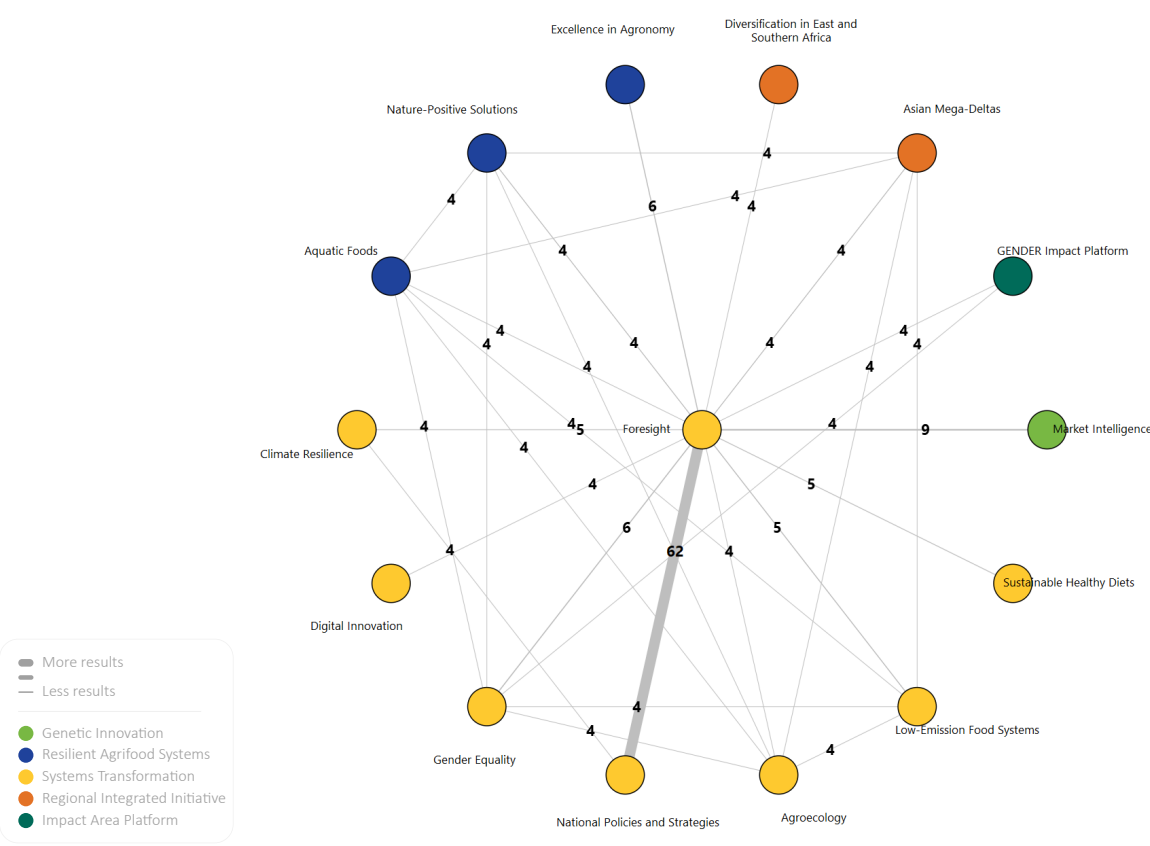
Partnerships and Foresight’s impact pathways

The Foresight Initiative partners with numerous national and global research institutes and networks to develop state-of-the-art analytical tools, make them accessible, strengthen capacity, and produce high-quality collaborative research to inform decision-making by national governments, international financial institutions, and funding institutions including the BMGF and the USAID. At the national and regional level, Foresight continues to partner with the ANAPRI and its member centers in 16 countries, along with other policy research institutes such as the Kenya Institute for Public Policy Research and Analysis (KIPPRA), to strengthen capacity, conduct joint research, and inform decision making by national governments. In 2023, a similar partnership was initiated with the South Asia Network of Economic Modeling (SANEM), including the Bangladesh Institute of Development Studies (BIDS) and the Institute for Integrated Development Studies (IIDS) in Nepal. Foresight is also partnering with leading agricultural research institutes in large regional economies across the global south, such as the Chinese Academy of Agricultural Science (CAAS), the Indian Council of Agricultural Research (ICAR), the Bureau for Food and Agricultural Policy (BFAP) in South Africa, the Brazilian Agricultural Research Corporation (Embrapa), the National Research and Innovation Agency (BRIN) in Indonesia, and the Institute for International Negotiations on Agriculture (INAI) in Argentina. These technical partnerships support capacity sharing,

information exchange, and improved agrifood system foresight and outlook work in these key countries as well as regionally and globally. At the global level, Foresight continues to work with the Agricultural Model Intercomparison and Improvement Project (AgMIP) Global Economics group of universities and research institutes with foresight modeling expertise in the fields of agriculture, climate change, and food security. Members include Wageningen University, the International Institute of Applied Systems Analysis (IIASA), the Potsdam Institute for Climate Impact Research (PIK), and others. Working with Cornell University and AgMIP partners, Foresight is contributing to the EAT-Lancet 2.0 Commission, which is currently updating its recommendations for achieving healthy and sustainable diets. One of Foresight’s key contributions in these collaborations, beyond tools and data, is its emphasis on developing countries within the global context. Foresight also partners directly with other leading universities in related fields, including MIT and Oxford University, and contributes to the Food Systems Countdown Initiative. Overall, Foresight’s partnerships with global and national networks and research programs allow it to contribute to both global and national policy dialogue and decision-making towards equitable and sustainable agrifood system transformation.

Section 6: CGIAR Portfolio linkages

FORESIGHT’S INTERNAL NETWORK OF COLLABORATIONS



Connections are sized by the number of reported results. Collaborations where only one result was reported with a linkage between two Initiatives are excluded.

Portfolio linkages and Foresight’s impact pathways

Foresight is working closely with other CGIAR Initiatives to achieve shared goals and outcomes, including:

- With the **National Policies and Strategies (NPS)** Initiative and national partners to analyze impacts of El Nino and other agrifood system shocks on prices, incomes, and food security, and to engage with decision-makers to inform policy choices; and to conduct agrifood system diagnostic studies in these same countries, as well as states in India. Foresight’s public goods allow NPS to provide timely, high-quality analysis for various government requests and facilitate cross-country comparisons and global trends. Additionally, Foresight offers training materials that NPS can adapt and deliver in-person, often through training-of-trainers approaches.
- With the **Climate Resilience and Low-Emission Food Systems** Initiatives to analyze climate change impacts and options for adaptation and mitigation in focus countries.
- With the **Gender Impact Platform and Gender Equality** Initiative to assess the state of foresight knowledge on gender and food systems transformation, and to analyze investment needs to close gender earnings gaps.

- With the **Excellence in Agronomy** Initiative on how climate risks affect crop yields and farm management practices.
- With the **Diversification in East and Southern Africa** Initiative to analyze impacts of climate change on production of major commodities in Eastern and Southern Africa, and to explore policy options to increase diversification.
- With the **Market Intelligence (MI)** Initiative to analyze the potential of different breeding investments to meet changing patterns of demand and supply under alternative future socioeconomic and climate conditions. MI is a user of Foresight information to (1) enrich its set of impact opportunity and projected benefit indicators with future projections, and (2) project its set of “current” market segments to the future.
- With the **Digital Innovation** Initiative and other partners to develop new ways to share foresight-related data and models.
- With the **Sustainable Healthy Diets** Initiative and other partners to analyze the cost of healthy diets for different regions and population groups under alternative future scenarios.
- With other Initiatives through sharing of foresight-related data, tools, and staff expertise.

Foresight’s work to develop cutting-edge analytical tools, strengthen accessibility and capacity, and produce high-quality research to inform decision-making also complements related non-pooled (bilateral) projects, including:

- With USAID and BMGF to develop new tools and metrics to track the drivers of inclusive agricultural transformation; to support FARRMS and analyze climate and global market shocks; country model database development and documentation; and inform national and development partner investment priorities within the agrifood system.
- With the EAT-Lancet Commission to examine the impacts of future diets on health and planetary boundaries – including to improve attention on issues of concern to low-income countries.
- With the Asian Development Bank to analyze challenges to food systems in the Asia-Pacific region under changes in climate, demographics, and markets, and explore policy and investment options to address these challenges.



Fouban market, Cameroon.
Credit: Jasmine Halki

Section 7: Adaptive management

RECOMMENDATION	SUPPORTING RATIONALE
Build on existing progress and strengths to ensure continuity towards achievement of End of Initiative outcomes.	Given the ongoing CGIAR reform process and associated uncertainties, it is essential to maintain continuity to deliver on the Initiative’s workplan and outcomes.
Shift focus from standalone country climate change assessment reports to climate-informed analysis of agrifood system investment priorities.	Rather than focusing on standalone country climate reports, there is greater demand from government partners for climate-informed analysis of their agricultural development strategies and investment plans. WP2’s final country climate assessment reports will reflect this shift in focus.
Conduct regular inventories at model and data level to identify the status of documentation that is needed in order to prioritize what documentation needs to be generated, improved or updated.	Documentation is a living process. There is a constant need to update various types of documentation around models and tools, and data and metrics, as these tools and data themselves continued to be updated and improved.
Improve identification of key users of Foresight data and metrics and their requirements in terms of how the data and metrics are presented.	Need to ensure that generation of data, metrics and related visualization tools are based on end-user needs and requirements.
Integrate the in-person and online training platforms.	There is a need to bring the two training platforms (in-person and online) closer together and make them complementary to each other, building on an understanding that the in-person training offers depth while the online training offers scaling capability.
Fundraise for new joint proposals with partners, and identify new areas of use for the Initiative’s outputs.	This emerged as a key point during the pause and reflect process. CGIAR pooled funds are often not enough to deliver against our ambitious theory of change.

Section 8: Key result story

Bridging Gaps: Foresight Training Programs for Policy Decision-making

Addressing modeling system gaps in Africa and Asia by equipping local partners with tools and expertise to support national decision-making.



Researchers in developing countries often do not have access to the models and data needed to evaluate agrifood system trends and priorities. The Foresight Initiative is working with partners in Africa and South Asia to develop models and databases, and is providing diverse training options, including open access online courses, in-person in-country workshops, and training-of-trainers programs. This ensures wider access to modeling tools and empowers local institutions to conduct their own foresight analysis and inform national policies.

Researchers in developing countries rarely have access to the advanced modeling and data systems that developed countries and the CGIAR use to analyze trends, policies, and priorities within food, land, and water systems. This makes evidence-based decision-making more difficult, leading to less (cost-)effective policy choices and crisis management. To address this gap, the Foresight initiative is working with partners, especially in Africa and Asia, to develop models and databases as international public goods, transfer them to local institutions, and provide training opportunities tailored to partners’ needs and expertise.

In 2023, the Foresight Initiative conducted seven training events in eight countries and provided a total of 808 person-training days to participants from 17 countries. To sustain the transfer of modeling assets and capabilities while also reaching a broad audience, the Initiative’s training program takes multiple forms, including open online courses, in-person in-country workshops, and a “training-of-trainers” approach. This is proving successful, with partners using CGIAR foresight and modeling systems to conduct their own research and inform policies.

Online training: Foresight has developed a novel online training course that introduces modeling fundamentals to students, with a focus on developing countries and CGIAR’s modeling systems. The first cohort of students took the online course in 2023 and this included young graduate students from Africa and elsewhere. Additional introductory courses will be conducted in 2024, and advanced modules will be added. [The Foresight Portal](#) hosts an online training course and provides space for a growing community of modeling practitioners.

In-person training: Foresight also conducted a series of in-person training courses in 2023. The Initiative has adopted a network

approach to training by partnering with the [Africa Network of Agricultural Policy Research Institutes](#) (ANAPRI) and with the [South Asian Network on Economic Modeling](#) (SANEM). This approach will strengthen the capabilities of both local institutions and individual researchers.

The ANAPRI training program is implemented together with the [Bureau for Food and Agricultural Policy](#) (BFAP) and supports a large ANAPRI-led project, [Policy and Investment Prioritization through Value Chain Analysis](#) (PPVC). This is novel because training is offered in the context of a real-world locally led project. Trainees not only learn how to use CGIAR’s modeling tools but can immediately apply their skills in a practical setting as members of a project implementation team. A similar “learning-by-doing” approach is being followed with research institutes in the SANEM network.

Another important dimension of the Initiative’s training program is the Modeling Service Center (MSC) that ANAPRI is establishing at its secretariat headquarters in Lusaka, Zambia. To support this institutional innovation, the Foresight Initiative is providing long-term training and mentorship to MSC researchers on the economywide modeling of agricultural value chains, food policies, and climate change. To raise awareness and generate demand for the MSC, the Initiative is also providing [high-level training](#) to policymakers and local thought leaders on how modeling can be used to inform policy decisions.

Training of trainers: Foresight partnered with the [National Policies and Strategies \(NPS\) Initiative](#) to implement a “training-of-trainers” program specialized in economywide modeling. An initial goal of this collaboration is to support modeling teams within partner research institutions, such as the [Kenya Institute for Public Policy Research and Analysis](#) (KIPPRA).

Going forward, Foresight will continue to implement its innovative training program that includes both online and in-person courses coupled with “learning-by-doing” and a “training-of-trainers” approach. This diverse approach is already proving to be successful at building, and hopefully sustaining, foresight and modeling capabilities within key partner institutions across developing countries to foster the continued development of decision-analysis infrastructure.

Primary Impact Area



Other relevant Impact Areas targeted



Contributing Initiative

Foresight

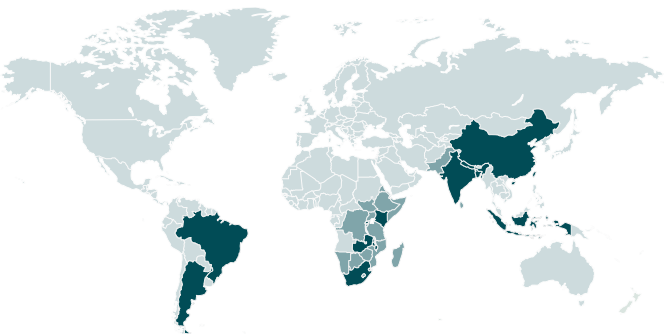
Contributing Centers

IFPRI · ILRI · Alliance of Bioversity International and CIAT

Contributing external partners

Tegemeo Institute of Agricultural Policy and Development · Regional Network of Agricultural Policy Research Institutes of East and Southern Africa · Malawi Agricultural Policy Advancement and Transformation Agenda · Institute of Statistical, Social and Economic Research, University of Ghana · Bureau for Food and Agricultural Policy · Egerton University · Centro de Programas e Políticas Agrárias, Universidade Eduardo Mondlane · Economic Policy Research Network Rwanda · Institut Senegalais de Recherche Agricole · Makerere University · University of Zimbabwe · University of Kinshasa · Namibia University of Science & Technology · Lilongwe University of Agricultural and Natural Resources · University of Ibadan

Geographic scope



Regions: Eastern Africa · Southern Africa · Southern Asia

Countries: Argentina · Bangladesh · Brazil · China · India · Indonesia · Kenya · Malawi · Nepal · Rwanda · South Africa · Zambia



The Africa Network of Agricultural Policy Research Institutes values our partnership with the CGIAR Foresight Initiative. Their support enhances our capacity for policy analysis, facilitating access to vital data and PPVC modeling tools. The Initiative’s commitment to on-demand capacity-building for our Modelling Services Center is invaluable, advancing ANAPRI’s mission significantly.

Antony Chapoto, Interim Executive Director, ANAPRI



Back cover photo

Rice farmer ploughing his rice field.
Credit: Aulia Erlangga, CIFOR



INITIATIVE ON
Foresight