IN BRIEF

Insight to Impact: A Decision-Maker's Guide to Navigating Food System Science

CGIAR Flagship Report
April 2025

CGIAR

Acknowledgments

CGIAR would like to express our thanks to those who contributed to the consultations that directed report structure and format and helped us identify the questions that decision-makers are grappling with. These insights formed the bones of the report.

We are grateful to the scientists who generously shared information about solutions and resources to address these challenges. These resources put flesh on the bones of the report. Thank you also to those who reviewed the report and provided advice on making it more engaging and useful for decision-makers.

A list of those who contributed can be found in the full report.

We would like to thank all Funders who support this research through their contributions to the CGIAR Trust Fund, as well as bilateral funders, and for the special support for this project from the German Federal Ministry for Economic Cooperation and Development (BMZ) with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).

Read the full CGIAR Flagship Report here.

Insight to Impact: A Decision-Maker's Guide to Navigating Food System Science

What Do Decision-Makers Need?

To guide the structure and content of the CGIAR Flagship report, we carried out consultations with users and potential users of CGIAR research, donors, partners, and decision-makers in low- and middle-income countries, UN processes, other global representatives, and international bodies. We thank them all for their time and engagement in making this report.

Here are some of their insights:

“One of the main barriers is the gap in communication between the scientist and the private sector, including the farmer who is supposed to be the key beneficiary of the materials and innovations the scientists are coming up with.”

Grace Mijiga Mhango
President of the Grain Traders and Processors Association of Malawi

“We know quite well how to reduce greenhouse gas emissions and adapt to climate change in the agricultural sector, but the key question is: what do policymakers need to support this development? At the heart of this is the need to make sustainability a viable business model for the farming sector. Farmers need more than a mandate to change—they need clear opportunities, incentives and practical pathways.”

Christine Chemnitz
Director, Agora Agriculture

“The reality is that today we are facing challenges, particularly in the last few years, that were unimaginable, even five or ten years ago. The speed at which climate change is coming at us and farmers around the world, is not what anyone expected...

The rate of return of investing in agricultural research is increasing by the minute, while the costs of not doing it are phenomenal.”

Jüergen Vöegele
Vice President, World Bank/Chair of the CGIAR System Council

“Scientists need to understand the system the government is operating in, understand and use their language, work with the policies already in place and respond to what the government aspires.”

Medrina Mloza Banda
Principal Secretary-Technical Service, Ministry of Agriculture and Water Development, Malawi

“A very good dissemination strategy is better than very good findings that are inaccessible.”

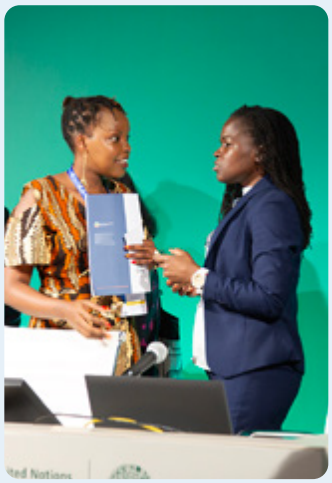
Mugera Isaac
Managing Director,
Agro and More Ltd, Uganda

A full list of those consulted is available in the full report.

CGIAR Flagship Report Overview

The *Insight to Impact Report* is a result of CGIAR's commitment to continually improving the accessibility and relevance of our research to decision-makers. It was sparked by funders, partners, and stakeholders recognizing that CGIAR's extremely valuable research and global public goods, while delivering impact across the 2030 Sustainable Development Agenda, are not consistently being used. Lessons learned from report development will help CGIAR present its research in ways that better bridge the gap between science and action. This summary report provides an overview of key highlights and recommendations from the full report.

Which Decision-Makers Will Find This Report Useful?



Primary Decision-Maker Target Audience for *Insight to Impact*

Decision-makers from **low- and middle-income** countries and **regional bodies** engaged in national, regional, and global processes: Ministries of Agriculture, Fisheries, Forests and the Environment, Energy, Health, Finance, Planning, Social Affairs, and Water; International Finance Institutions; Those engaged with the United Nations (UN) Convention on Biological Diversity (CBD), the UN Convention to Combat Desertification (UNCCD) and the Intergovernmental Panel on Climate Change (IPCC), as well as the UN Food Systems Summit (UNFSS), the UN Committee on World Food Security (UNCFS) and other entities in pursuit of progress towards the 2030 Sustainable Development Goals (SDGs).

Other Decision-Makers Who May Find This Report Useful

National agricultural research and extension systems (NARES), non-governmental organizations (NGOs), policymakers and decision-makers in high-income countries involved in national, regional, and global processes, private sector actors from small to large agribusiness companies, funders/philanthropists, trade and regulatory bodies, non-CGIAR scientists/CGIAR staff, and regional economic and development bodies.

Why Food Systems Science Matters

Food system science and innovation can transform food systems to deliver across the 2030 Sustainable Development Agenda. It is the foundation that decision-makers at local, national, regional, and global levels can use to make informed decisions that result in food systems that:

- Support regeneration rather than drive environmental degradation
- Become a net sink rather than a source of Greenhouse Gas (GHG) emissions
- Can adapt to the challenges of climate change
- Protect biodiversity rather than depleting it
- Provide culturally appropriate, affordable, available, diverse, and safe diets that ensure nutrition, health, and food security
- Contribute to producer stability and resilience, supporting livelihoods and reducing poverty for smallholders
- Can benefit over 500 million women and create new opportunities for 267 million young people.

Why CGIAR?

CGIAR is the world's largest agricultural research partnership, driving innovative solutions to transform food, land, and water systems for a more sustainable and resilient future. Through a network of world-renowned Research Centers and Alliances and collaboration with leading science and implementation partners globally, CGIAR generates cutting-edge knowledge, data, and evidence to build resilient food production systems and support sustainable development. Its research portfolio covers a diversity of crops, livestock, fish, natural resources, and agricultural policy and reform.

Generously supported by contributors to the CGIAR Trust Fund and bilateral (project-directed) funders, CGIAR has an annual research portfolio of just over USD 900 million with more than 9,000 staff working in over 85 countries. CGIAR research shows a good return on investment. Every dollar invested delivers USD 10 worth of benefits.

As decision-makers at global, regional, national, and local levels grapple with intensifying environmental, economic, and geopolitical challenges, CGIAR provides actionable solutions tailored to the most vulnerable populations. Its mission is centered on improving the lives of those most affected by food system inequalities, particularly in low- and middle-income countries. It brings a comparative advantage to complex solutions by delivering multidisciplinary research across all aspects of food systems.

CGIAR tools, resources, and products are freely available to users as global public goods. They are designed to be used by a variety of stakeholders and in a wide range of contexts. These resources can be used to support global, regional, and national processes and to formulate, develop, and negotiate evidence-based decisions and policies that deliver impact across the 2030 Sustainable Development Agenda.

Feedback Emerging from Report Consultation Process

- **Decision-makers crave clarity and pragmatism:** Too often, reports provide abstract theory when what is needed are practical solutions.
- **National contexts matter:** To truly be impactful, science must align with a country's strategies, expectations, and needs.
- **Partnerships drive progress:** Success comes from collaboration across sectors and regions, which depends on complementarity and trust.
- **Science must be accessible:** Science that sits out of reach on bookshelves does nothing for the farmer or the policy advisor trying to make quick decisions.
- **Interactive tools make science real:** It's not enough to present data and hope it gets used. Science should use tools that engage with different users to help them understand the concepts and their implications for everyday decision-making.
- **Storytelling is a powerful tool:** Stories showing impact have the power to move people's imagination in ways that data alone cannot.
- **Implementation requires continual engagement:** Engagement does not end with a report. Effective science demands ongoing engagement to maintain alignment with the real world and with the decision-makers' changing needs.

A full list of those consulted is available in the full report.

The report sets out to respond to these decision-makers' requests across CGIAR's five impact areas.

Climate Adaptation and Mitigation

Environmental Health and Biodiversity

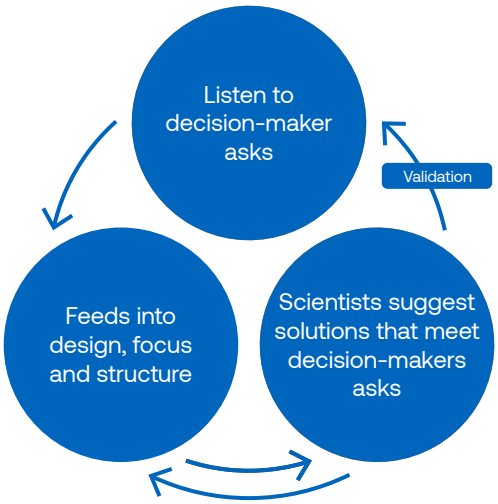
Gender Equality, Youth, and Social Inclusion

Nutrition, Health, and Food Security

Poverty Reduction, Livelihoods, and Jobs

Each section in the report presents key challenges followed by what science is telling us about the most effective entry points for action, investments, and policy. It then presents a series of question-and-answer exchanges between decision-makers and scientists based on the consultation. The responses highlight carefully selected solutions with proven or promising success, adaptability across contexts, relevance to diverse food systems, and ready-to-use resources.

The process of shaping and delivering the report



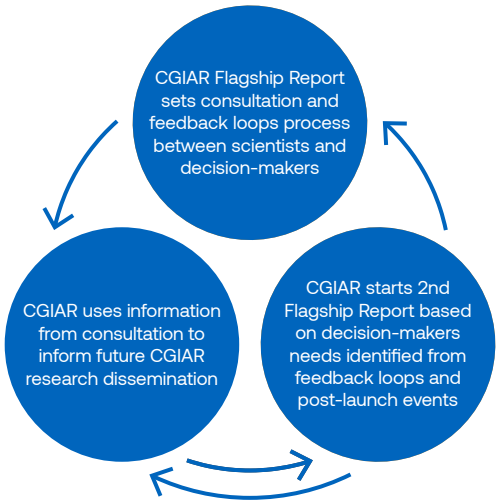
Report Consultation Process

To guide the structure and content of this report, we carried out consultations with users and potential users of CGIAR research, donors, partners, and decision-makers in low- and middle-income countries, UN processes, other global representatives, and international bodies.

Beyond the Report

This CGIAR Flagship Report: *Insight to Impact* is part of a wider bundle of decision-making resources. It will be supported by a series of publicly available videos, articles, and workshops where decision-makers and scientists explore how to better connect research to its users on the *Insight to Impact* website. These discussions will shape future editions of this report, which will feature deeper, targeted analyses of in-demand research areas.

The end of the report is just the start



01 Climate Adaptation and Mitigation

What Food Systems Science Tells Us

Food system actors must implement systemic mitigation and adaptation measures to reduce greenhouse gas emissions and enhance resilience across crop, livestock, agroforestry, and aquaculture systems. These approaches can transform food production and build resilience in the communities most vulnerable to climate change, particularly in low- and middle-income countries.

But they cannot be decided in isolation.
While climate policy and action plans are decided at global, regional, and national levels, implementation is always carried out by local communities who need capacity-building, investments in infrastructure, and access to finance that is fit for purpose to manage transition risks and costs to do this effectively.

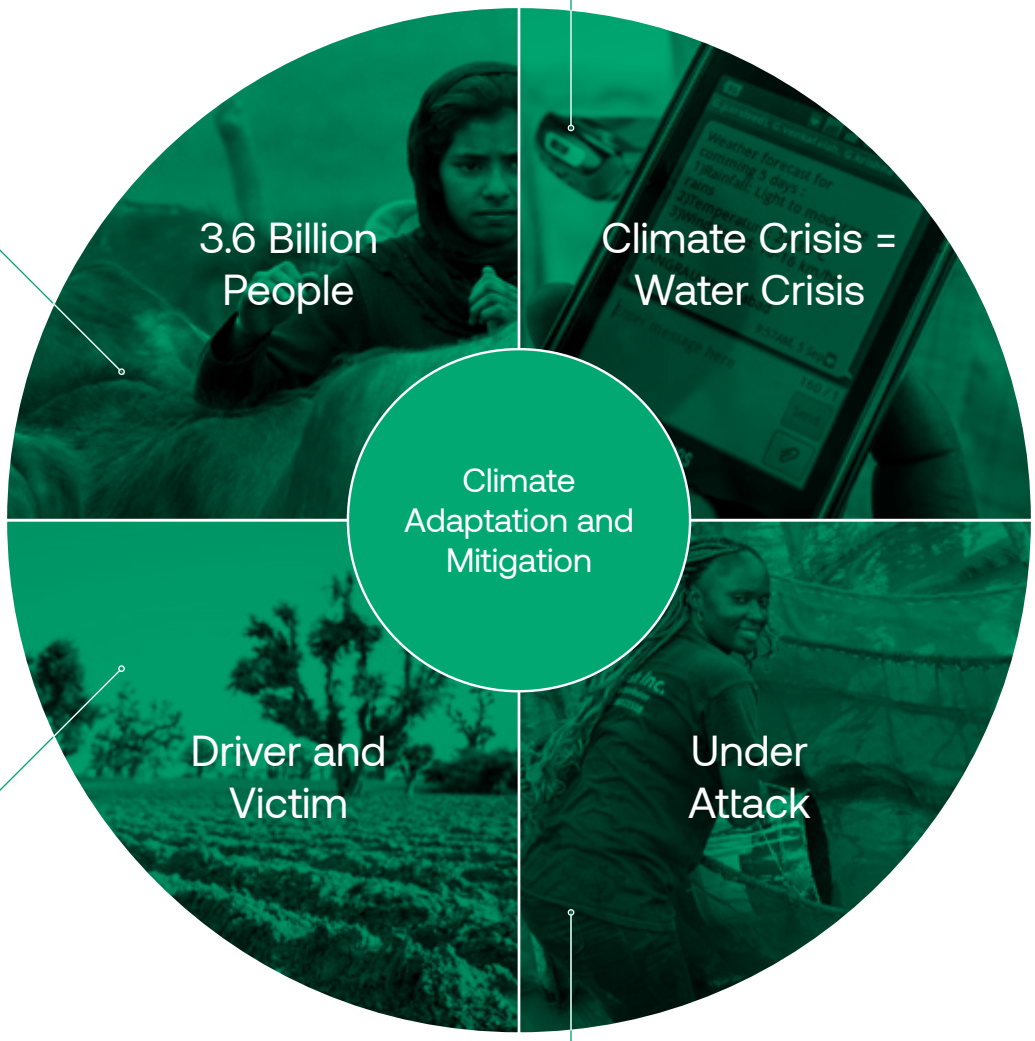
Recommendations for Decision-Makers

- ☑ Develop strategies and implementation plans that align with and are embedded within local, national, regional, and global frameworks while recognizing that their execution will be carried out by rural communities.
- ☑ Support farmers in implementing adaptation and mitigation solutions by amplifying their voices in decision-making and developing policies to account for local environmental, economic, and social factors.
- ☑ Increase food system stakeholder access to public and private finance to support climate transition approaches to reduce the risks and costs involved.
- ☑ Enhance farmer preparedness for the effects of climate change by investing in breeding improved varieties of animal and crop options suited for specific contexts and that meet farmers' needs.
- ☑ Customize early warning systems on specific hazards to ensure they are adapted to local contexts. Use evidence-based models and predictions to plan effectively for different scenarios.
- ☑ Do not take a single-technology approach but instead consider bundling technologies together to deliver across food systems rather than just targeting one problem.

Challenges

Globally, an estimated 3.6 billion people particularly across Africa, Asia, Central and South America and small island states, live in regions that are acutely vulnerable to climate impacts, including extreme weather events, degraded lands, and limited adaptive structure (IPCC 2023).

High water demands in food production are unsustainable, currently amounting to 70% of global water withdrawals. Between 2007 and 2017, droughts affected more than 1.5 billion people globally (UNCCD, 2024), disrupting crop yields, livestock production, and fisheries.



Agriculture, forestry, and land use account for approximately 22% of global greenhouse gas emissions. At the same time, climate change is steadily diminishing the productivity of food systems worldwide.

Projections indicate substantial crop yield losses under worsening climate scenarios; for example, in a world that is 2°C warmer – an additional 189 million people will face hunger by 2050 (WFP, 2021).

Rising temperatures and shifting weather patterns exacerbate the spread and severity of diseases that affect food and forage crops, livestock and fish, and crop pests that proliferate across wider geographical ranges in the warmer, more humid conditions.

Q&A: What do Decision-Makers Need?

Insight to Impact describes a range of case studies—each with resources—that help decision-makers navigate solutions to their questions about climate adaptation and mitigation. The full case studies can be found in the report.

Decision-Maker Question: "How can we help farmers better prepare for unexpected weather and climate change?"

One Answer: Expanding global access to and use of climate information services for farmers

Decision-Maker Question: "How can we best achieve national progress towards meeting global climate targets?"

One Answer: EnviroCow – a net zero future for sub-Saharan Africa's smallholder cattle production

Decision-Maker Question: "How can we reduce agriculture's water and greenhouse gas footprint?"

One Answer: SMART rice water management

Decision-Maker Question: "How can we develop the varieties farmers tell us they need to adapt to climate change more quickly?"

One Answer: Tropical potatoes: a public-private partnership in speed breeding

02 Environmental Health and Biodiversity

What Food Systems Science Tells Us

The ecosystems that underpin food production depend on biodiversity to carry out their vital functions effectively. Healthy ecosystems sustain crops, livestock, and fisheries. They maintain soil health, enable pollination, and carry out natural pest control. They enhance resilience to the changing climate. Agricultural systems that include a rich variety of plants and animals can diversify farmers' income sources, reduce risks from harvest failures, and supply a broad range of nutrients to sustain healthy diets.

Recommendations for Decision-Makers

- ☑ By applying science-based approaches and understanding trade-offs, decision-makers can meet food production goals while protecting environmental health and biodiversity. In fact, these objectives are more interconnected than they may seem. Food production relies on wild species that provide essential services like pollination, pest control, and soil health, while biodiverse farming systems create vital habitats that support wild species.
- ☑ Ensure that policies and strategies are inclusive and co-developed with those who will implement them, most often at the community level. That way, communities will become engaged and proposed solutions will work in diverse local contexts.
- ☑ Integrate environmental health considerations into urban agrifood system policies as well as rural ones. For example, policies that support and incentivize circular bioeconomy models in cities keep resources in use for as long as possible.
- ☑ Consider incentivizing communities to protect ecosystems and biodiversity through mechanisms like Payment for Ecosystem Services, which compensates people for conservation efforts, such as time spent or reducing agricultural land use.
- ☑ Invest in building community capacity to use digital tools in restoration projects—such as mobile apps and blockchain—to improve transparency, accountability, and data collection for monitoring and reporting.

Challenges

Food systems are built on an ever-narrowing genetic base of crops and animal species. Globally, production, markets, and diets have become more similar (Khoury, 2014). Genetic uniformity increases vulnerabilities, for example, compromising resilience to the increase in crop pests and diseases from climate change. It also reduces diet diversity options.

Already fragile food production systems need to meet the demands of an expected global population growth of 2 billion people. Half of this growth is expected to come from Africa, the world's fastest-growing population, (UN).

One million species, including the plants and animals humans use for food and animal feed, are at risk of extinction (IPBES) including from agriculture, a major driver of habitat loss for the wild insects and other animals that pollinate a third of the world's crops. Despite similar goals, wild and agricultural biodiversity conservation agendas often remain separate.

40% of the world's land is degraded (UNCCD, 2024) which reduces nutrients in the soil and its capacity to retain water. This impacts the yields of food and forage crops. In sub-Saharan Africa, 80% of land degradation is caused by soil erosion.

Q&A: What do Decision-Makers Need?

Insight to Impact describes a range of case studies—each with resources—that help decision-makers navigate solutions to their questions about environmental health and biodiversity. The full case studies can be found in the report.

Decision-Maker Question: "How can we better manage and protect precious shared natural resources?"

One Answer: Harnessing people power in Southern Africa

Decision-Maker Question: "How can we partner with communities to support nature-friendly farming while protecting smallholder livelihoods?"

One Answer: MY FARM TREES: Agroforestry and payments for ecosystem services

Decision-Maker Question: "How can we reduce the environmental impact of food systems?"

One Answer: Circular Bioeconomy Innovation Hubs

Decision-Maker Question: "How can we support farmers to make the best use of fertilizer?"

One Answer: Getting more for less with a bespoke fertilizer advice service in Ethiopia

03 Gender Equality, Youth, and Social Inclusion

What Food Systems Science Tells Us

Investing in gender equality, championing youth, and promoting social inclusion in food systems would benefit over 500 million women working in food, land, and water systems, and create new opportunities for 267 million young people. It would also drive substantial economic and social gains—up to an estimated USD 1 trillion global GDP and reduce the number of food-insecure people by up to 45 million.

Recommendations for Decision-Makers

- ☑ Recognize that all food systems are not equal for women, young people, and other marginalized communities when developing policies and action plans for sustainable development in food systems. These inequalities are deep-rooted and widespread and could increase due to geopolitical and environmental challenges. These groups represent a huge proportion of the population, so addressing their inclusion can bring substantial positive change for communities.
- ☑ Ensure that the necessary enabling factors and systems (such as access to land ownership and bank accounts) are identified and put in place for equitable access to resources so that women are as likely as men to adopt new technologies and innovations (FAO 2023). It is estimated that if women farmers had the same access to productive resources as men, their yields could increase by 20-30% (FAO 2011).
- ☑ Do not forget the young people. Investments in food systems and capacity-building programs that help young people unlock their potential can deliver a 'youth dividend', although young men and women face different barriers that require targeted action to overcome—it is not a 'one-size-fits-all' approach.
- ☑ Use digital tools and information and communication platforms to create substantial opportunities to advance social inclusion. Provided the gap in access is closed, these tools can improve and expand access to financial services, education, and agricultural information for marginalized and remote communities, ensuring equitable participation. They also equip decision-makers with the data needed to design and monitor inclusive policies that address diverse population needs.
- ☑ Decision-makers must prioritize collecting disaggregated data to make better food system decisions and ensure no one is left behind. Often data about marginalized groups are sparse, especially at the national level.

Challenges

In many countries, food systems are more important for women's livelihoods than men's. For example, two-thirds of the world's 600 million poor livestock keepers are rural women. They tend to have reduced access to land, credit, capital, training, and extension services and are often constrained by legal restrictions or social norms. (FAOSTAT).

Young people face challenges in securing employment, training, or related economic opportunities, particularly in parts of Africa. This is driving an increase in rural-to-urban migration.

More than 85% of the world's 1.2 billion youth live in low- and middle-income countries. Incentivizing them to participate in rural agrifood production systems is critical (FAO 2023).

It is estimated that every 1° C increase in long-term average temperatures is associated with a 34% reduction in the total incomes of female-headed households relative to male-headed ones.

They also take on additional work burdens on the farm or in the home in times of extreme weather events (FAO, 2024).

74% of Indigenous Peoples often face systemic exclusion from decision-making, resources, access to and ownership of land, status and legal rights, policy benefits, and market access (ILO 2019).

Indigenous women are at increased risk of losing access to land and natural resources, and exposure to exploitation and unsafe working conditions (ILO 2012).

Q&A: What do Decision-Makers Need?

Insight to Impact describes a range of case studies—each with resources—that help decision-makers navigate solutions to their questions about gender equality, youth, and social inclusion. The full case studies can be found in the report.

Decision-Maker Question: "How can we improve the engagement of women in decision-making?"

One Answer: Using the Women's Empowerment in Agrifood Governance (WEAGov) assessment framework

Decision-Maker Question: "How can we help young women succeed as food entrepreneurs?"

One Answer: Empowering women in business through healthy chickens in Tanzania

Decision-Maker Question: "How can we create agribusiness jobs for young people?"

One Answer: Supporting a generation of I-Youth Agripreneurs in Nigeria

Decision-Maker Question: "How can we ensure breeding programs generate innovations that women and men in smallholder communities need?"

One Answer: Community flocks for better sheep and goat breeding in Ethiopia

04 Nutrition, Health, and Food Security

What Food Systems Science Tells Us

Nutrition-sensitive food systems provide culturally appropriate, affordable, available, diverse, and safe diets that ensure nutrition, health, and food security. When coupled with women's empowerment to make informed dietary choices and nutrition-sensitive programs such as social protection to address affordability, they can strengthen family nutrition in low- and middle-income countries. National programs that incentivize sustainable nutrition-sensitive food production, distribution, and consumption across crop, livestock, aquatic food, and agroforestry systems are essential for long-term human and planetary health. The right policy and investment support can drive market demand, boost livelihoods and improve diets and nutrition.

Recommendations for Decision-Makers

- ☑ Consider the whole food system—farm to consumer, and links to other sectors, like education and infrastructure—when working to achieve sustainable healthy diets (accessible, affordable, safe, and equitable, while being culturally acceptable, with low environmental impact).
- ☑ Adopt an integrated mix of food-based strategies such as biofortification and increased dietary diversity to address nutrition, health, and food security. No single approach can effectively address the complex dietary needs of diverse populations and deliver whole diets that are healthy, affordable and sustainable.
- ☑ Make collaborative decisions across multiple sectors – no single actor can make the changes needed without finding synergies and identifying trade-offs, for example, between health, education, finance, social protection, and agriculture actors, and through engagement with both large and small agribusinesses.
- ☑ Take care when introducing alternative dietary options into diverse local food systems and population groups. Without considering consumer preferences, cultural acceptance, affordability, and market demand, efforts may fall short or, worse, disrupt livelihoods and food and nutrition security.
- ☑ Invest in improved aquatic foods and livestock breeds as well as local staple foods such as roots, tubers, bananas, and legumes. Along with greater access to fruits and vegetables, these staples can drive dietary, nutritional, and economic gains, especially in sub-Saharan Africa and large ocean states, where they are well-suited to a changing climate.
- ☑ Balance emergency responses to conflict and natural disasters that address acute hunger with long-term efforts to build resilient food systems that ensure nutritious, diverse, balanced, and safe diets.

Challenges

In 2023, nearly a third of the global population (2.33 billion) faced food insecurity, impacting public health and economic stability.

Malnutrition, driven by poor diets, includes people not getting enough food or the right balance of nutrients to stay healthy. This fuels diseases like diabetes and obesity, especially in Latin America, Africa, and Asia-Pacific, where rates are rising.

In conflict-affected and fragile regions, the situation is even more critical. In South Sudan, 43% of children are unable to access a nutritionally adequate diet, a figure that rises to 63% in Somalia and a staggering 90% in Gaza (Kadiyala, 2024).

Compounding this issue, conflict, violence, and climate-induced disasters forced 71.1 million people into displacement in 2022, disrupting food production systems and further destabilizing food security.

Low- and middle-income countries face GDP losses of 3–16% from malnutrition due to reduced productivity, with women and girls disproportionately impacted.

Maternal malnutrition affects both mothers and children, contributing to 45% of global child mortality and hindering development.

Over half of children under five and two-thirds of non-pregnant women of reproductive age lack essential nutrients like iron, zinc, and vitamin A or folate.

Progress toward ending hunger and ensuring healthy, affordable diets is stalling due to the climate crisis, rising geopolitical tensions, population growth, poverty, rapid urbanization, and shifting consumption patterns (ISDC, 2023).

Q&A: What do Decision-Makers Need?

Insight to Impact describes a range of case studies—each with resources—that help decision-makers navigate solutions to their questions about nutrition, health, and food security. The full case studies can be found in the report.

Decision-Maker Question: "How can scientific research guide policy and incentives to promote biodiversity in food and nutrition?"

One Answer: Mixing menus through policy incentives in Brazil, Kenya, Sri Lanka and Türkiye

Decision-Maker Question: "How can we build and implement strategies that result in better health for people, animals, and the environment?"

One Answer: Integrated service delivery in Ethiopia, Kenya, and Somalia

Decision-Maker Question: "How can we best target specific nutrition gaps that are affecting people in our countries?"

One Answer: Biofortifying crops in Pakistan to tackle zinc deficiencies

Decision-Maker Question: "Which fish are best bets for nutrition outcomes?"

One Answer: The global GIFT that keeps on giving

05 Poverty Reduction, Livelihoods, and Jobs

What Food Systems Science Tells Us

Food systems can help to effectively address poverty reduction, livelihoods, and jobs. With the right policies, investments, and research, they can stimulate economic growth and promote social inclusion. Yet an estimated 692 million people fell below the International Poverty Line of USD 2.15 per person per day in 2024, the measure used by the World Bank to measure absolute poverty globally. With investment in critical areas like technology, infrastructure, and market access, food systems can achieve their potential and provide solutions to systemic challenges, including youth unemployment, low incomes, gender disparities, and other inequalities.

Recommendations for Decision-Makers

- ☑ Make poverty reduction a higher priority both as an end in itself and in the pursuit of shifting broader global and national priorities, such as climate change adaptation and mitigation. Poverty is one of the leading causes of poor diets and food insecurity.
- ☑ As part of efforts to reduce rural poverty, tap into rising food demand from the rapid demographic shift towards urban centers. Opportunities include raising farm incomes, improving opportunities for high-value enterprises needed for viable small-scale farms, and creating new business and job opportunities in extended supply chains, with the support of added investment into infrastructure such as electricity, transport, and storage.
- ☑ Partner with the private sector to stimulate jobs, entrepreneurship opportunities, and investments, especially in rural areas. Economic growth is a critical engine of continuing change in food systems in low- and middle-income countries, potentially driving down poverty.
- ☑ Invest in capacity building and infrastructure in evolving technologies and institutional innovations as a tool for poverty alleviation. For example, digital agriculture tools, powered by AI and remote sensing, can deliver critical market, weather, and financial information directly to farmers, improving decision-making and stabilizing incomes, when supported by policies that ensure equitable participation in the digital transition.
- ☑ Ensure regulatory frameworks that govern seed systems promote rather than hinder the increased availability of high-quality, disease-free, and affordable seeds and animals to smallholders, and engage rural communities in breeding programs to increase access to these resources and to stimulate jobs and enterprise, especially in remote rural populations.

Challenges

83.2% of the world's poor people live in sub-Saharan Africa (553 million) and South Asia (402 million) (UNDP, 2024).

Rural populations – especially smallholder and subsistence farmers, fisherfolk, pastoralists, and forest-dependent communities – are particularly vulnerable. Many lack access to essential resources like land, training, financial services, and decent employment opportunities.

Climate change exacerbates poverty, and poverty makes communities more vulnerable to climate impacts.

Aligning poverty reduction with sustainable agricultural practices has upfront costs of green technologies and conservation measures. These are often prohibitive for small-scale farmers, despite national and regional policy commitments to promote sustainable farming.

20% of young people lack access to employment, education, or training (WEF, 2024).

Agriculture is often viewed as an unappealing and unsustainable career, leading to significant youth migration to urban areas.

Women, who play a vital role within agrifood systems, face deeply entrenched inequities. Their work is more likely to be informal, low-skilled, and labor-intensive, and women in waged employment earn just 82 cents for every dollar earned by men.

These disparities perpetuate cycles of poverty and exclusion (FAO, 2023).

Q&A: What do Decision-Makers Need?

Insight to Impact describes a range of case studies—each with resources—that help decision-makers navigate solutions to their questions about poverty reduction, livelihoods, and jobs. The full case studies can be found in the report.

Decision-Maker Question: "How can we leverage public-private partnerships to find the best bet innovations to help secure farmer livelihoods and economic growth?"

One Answer: More for less - doubling the productivity of crops, livestock, and fish in Africa

Decision-Maker Question: "How can we incentivize investment in the seeds that farmers want and need?"

One Answer: Boosting bean production through collaboration

Decision-Maker Question: "How can we stimulate rural job opportunities for young people and women?"

One Answer: New potato seed technologies increasing yields, jobs, and incomes in Asia and Africa

Decision-Maker Question: "How can we reverse fisheries decline while supporting the incomes of those who depend on them for their livelihoods?"

One Answer: Community-based fisheries management in the Philippines and Solomon Islands

Navigating the Future by Aligning Science and Decision-Making for a More Certain Future

What Food Systems Science Tells Us

The world in 2025 faces a complex and evolving set of risks. Geopolitical conflicts, climate change, technological disruption, economic volatility, and social inequalities are reshaping decision-making processes. The Global Risks Report 2025 highlights that the world's major threats in the immediate future include state-based conflicts and extreme weather. In the longer term, concerns shift towards broader risks such as natural resource depletion and artificial intelligence risks.

Decision-makers at every level and across every sector already make complex choices, and now they must predict, navigate, and respond to increasingly fast-paced and erratic shifts. Some of these, such as conflict and disaster relief, require short-term emergency responses. Some require longer-term planning and action without concrete knowledge of how emerging and evolving risks, such as rising global temperatures, may manifest. Some require further understanding of advancing technologies to leverage the opportunities they present and to contain the risks they pose. The growing prevalence of disinformation further complicates this task, making it harder to identify trusted sources for reliable insights and evidence.

Effective decision-making processes in food systems require collaboration across sectors, stakeholders, and governance structures. These processes evolve as contexts shift. However, policies affecting these systems are often made without fully considering their wide-ranging and interconnected impacts and how to manage complex choices with limited resources.

Recommendations for Decision-Makers

- ☑ Foresight analysis is critical to support decision-makers who require forward-looking and robust scientific evidence about future challenges to help them navigate uncertainty effectively.
- ☑ Climate adaptation and disaster preparedness must be at the core of food security strategies and research and development efforts, and investments need to step up to keep pace with the changing environment.
- ☑ Technological innovation must be harnessed to accelerate research, better inform decision-making, and be accessible and affordable to smallholders and small- and medium-sized agrifood enterprises to drive speedier progress toward sustainable agricultural development outcomes. For example, advanced breeding methods should be immediately adopted in low- and middle-income countries.
- ☑ Financing a just transition to sustainable agrifood systems scaling up public and private investment and international cooperation to align financial incentives and ensure that funding mechanisms benefit both people and the planet.
- ☑ Rapid urbanization and population growth require inclusive policies that promote equity and food security and that better connect urban centers with food production systems.

Foresight Analysis as the Foundation for Smarter Decisions

Demographic Shifts and Urbanization

Building Resilience Against Natural and Human-Driven Disasters

Financing a Just and Sustainable Transition

Leveraging Advanced Technologies for Food Systems Transformation

Read the full report to find out more about these emerging trends and challenges.

Insight to Impact: A Decision-Maker's Guide to Navigating Food System Science

Mind the Gap

Despite extensive research efforts, mismatches persist between studies and projects conceived in high-income countries and the realities of low- and middle-income countries. As a result, research often focuses on assumed problems rather than actual challenges on the ground. A recent independent evaluation of CGIAR science stressed the need to invest in local capacity development to help counter this challenge.

What Can You Do?

The road ahead is uncertain and challenging, but there is reason for hope. New opportunities are emerging worldwide to tackle these challenges, with scientific research playing a key role. More and more, climate policies and investments are focusing on agriculture, food systems, land restoration, and water management. At the same time, new data, modeling systems, guidelines, and decision-making frameworks are being created to help drive innovation and support better decision-making. The momentum spurred by the United Nations Food Systems Summit (UNFSS)—a global gathering in 2021 to help deliver the Sustainable Development Goals—continues at the country level.

We need bold, coordinated action. Without it, the pace of change will continue to outstrip the world's ability to respond, jeopardizing global food and nutrition security. Decision-makers need to align science and policy to build resilient, sustainable, and equitable food systems for future generations.

CGIAR and its partners have the expertise, knowledge, and global public goods to help.

Read the full CGIAR Flagship Report here.

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