



Food Security
Leadership
Council



Crawford
Fund FOR FOOD
SECURITY

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Driving Strategic Investments in International Agricultural Research

FOREWORD

Since inception, the agricultural research centers of the CGIAR have played an indispensable role in improving yields and strengthening global food security. They have been a key contributor to the doubling of global rice yields, the tripling of wheat and maize yields, and, consequently, to reducing the need for vastly more cropland, which has saved millions of hectares from clearcutting.

These gains cannot be wholly attributed to the centers' work, but imagining the counterfactual—a world in which the centers never existed—is enough to convince anyone that the centers are a treasure, indispensable to humanity and our common future. Without them, productivity would be a fraction of current levels across the globe, incomes lower and food costs higher. Hunger and famine might still afflict countries that have largely banished this scourge and even become substantial food exporters. Whether calculated in dollars, in economies bolstered, in lives saved and health improved, or in social stability enhanced, the centers have provided the world with one of the highest returns on investment of any global development or humanitarian effort ever undertaken.

CGIAR and other international agricultural research centers do not have a monopoly on results-oriented science much less the cutting-edge research that will help propel greater agricultural productivity and nutrition security in the future. A cohort of universities as well as the private sector contributes substantially. However, the international centers alone have capacity and staff widely dispersed across those countries and regions most in need of help, and uniquely this provides a critical feedback loop linking researchers with farmers in the field that no other institution can duplicate. By default if not by design, this also requires that the centers lead. As food systems face historically unprecedented challenges headlined by climate change, but including soil degradation, water limitations, nutritional deficiencies, and policy complexities, we need to empower the centers to lead global food security efforts as if our lives and future depend on it. They do.

In our lifetimes, CGIAR centers have broadened their research portfolios substantially and into areas that are not central to the core mission as we see it. Impact has been limited in these add-on endeavors. Governance structures have proliferated and gotten terribly complex and costly without commensurate benefits to the mission. At times in the last 50 years, it has seemed that the CGIAR system would never stop structurally reforming and reorganizing itself. Was all this churn worth it? Accountability of the centers to countries, to farmers, to fellow researchers and even to center boards, lessened over the years, replaced by internal mechanisms that demanded bureaucratic accountability to people and structures far removed from the field.

We who have signed our names to this report have long personal histories with the CGIAR as supporters, donors, staff, and collaborators. We have fiercely defended and advocated for the centers without interruption for a half-century. We now lead organizations—on opposite sides of the world—dedicated to advancing international agricultural research. Going forward, we want to see the centers at the center of substantially expanded global food and nutrition security efforts. This requires the CGIAR and its centers to be fit for purpose, much better and more reliably funded and institutionally lean and agile, with a staff unhindered by bureaucracy and empowered to think big and deliver big.

We hope *Driving Strategic Investments in International Agricultural Research* will spark sober reflection and contribute to the changes we believe will best equip CGIAR and other international agricultural research centers to serve the international community in the years ahead.

Cary Fowler

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INTERNATIONAL AGRICULTURAL RESEARCH CENTERS HAVE EARNED THEIR PLACE AT THE CENTER OF AGRICULTURAL DEVELOPMENT, BUT THE MOMENT DEMANDS MORE.

TO RISE TO TODAY'S CHALLENGES, THE INTERNATIONAL AGRICULTURAL RESEARCH SYSTEM REQUIRES A REFOCUSED STRATEGY, LEANER GOVERNANCE, AND MORE EFFECTIVE OPERATIONS – STARTING WITH:

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THE INVALUABLE ROLE OF INTERNATIONAL AGRICULTURAL R&D

International agricultural research has long been a driving force for progress in agricultural productivity, food and nutrition security, and natural resource management. International research centers' work matters most in the developing world, where hundreds of millions of smallholder farmers have few alternatives and the gap left by national systems and the private sector is largest.

International agricultural research centers must continue to play a leading role in driving agricultural growth to strengthen food and nutrition security. The production challenges facing the developing world—climate change, water scarcity, land degradation, and increasing demand for food from a growing population—require sustained innovation. These challenges are transnational in nature and most acute in countries with the least capacity to address them alone.

International agricultural research centers can help address this vital gap. Their global networks bring together the experience and expertise of scientists and farmers from around the world to solve global challenges in a way that no single country research system can. Unlike the private sector and most well-funded national programs, they develop innovations that 1) are openly available as international public goods; 2) are tailored for the developing world and smallholder farmers; and 3) advance social goals, like nutrition, poverty alleviation, and natural resource conservation. And as the world enters the age of AI, these international centers are uniquely positioned to generate the open, high-quality data needed to apply AI to agricultural challenges in the developing world.

The international centers are invaluable partners to national research programs in the developing world, supporting their growth with technology, expertise, and transnational solutions, and enabling collaboration with research institutions across academia and the private sector.

GLOBAL IMPACT

The impact of international agricultural research centers extends far beyond the Green Revolution, with which their history is closely intertwined. In recent decades, they have also confronted the environmental and social challenges associated with some industrial agricultural practices and have helped pioneer conservation agriculture and other production systems that improve soil health, strengthen water-use efficiency, and reduce environmental degradation.

They have developed and disseminated drought-, heat-, and flood-tolerant staple crop varieties that are increasingly indispensable across the developing world. They have also led rapid responses to transboundary agricultural threats, deploying solutions that helped prevent devastating losses from pests and diseases affecting wheat, banana, cassava, cattle, and other staples.

Their work has contributed not only to higher agricultural productivity, but also to greater resilience, improved nutrition, and more sustainable management of land and water resources worldwide.



THE CGIAR

Much of the international agricultural research establishment is associated with the CGIAR, a global network of 15 international agricultural research centers that have driven some of the most important advances in agricultural productivity. The role of these centers is of unique and outsized importance.

The CGIAR itself is an umbrella organization that provides strategic direction and coordination to its 15 member centers and directs funds contributed to the network as a whole. Its purpose is to maximize the strategic impact of the entire network by facilitating collaboration, deconfliction, and prioritization.

CGIAR centers focus on crops and agricultural challenges of greatest importance to developing countries—areas that receive inadequate private-sector investment—and make their innovations available as international public goods. Crop technologies developed with CGIAR centers have now spread to 221 million hectares (546 million acres). Their adoption has raised economic welfare by \$47 billion per year. Overall, CGIAR's returns on investment for crop breeding programs are 10:1. The successes have depended on extensive research partnerships and the integration of biophysical and socio-economic science, resulting in innovations that are adopted and valued by millions of producers, both smallholder and large-scale.

The CGIAR centers are also home to an invaluable asset—the largest and most diverse publicly available crop collections, held in 11 genebanks across the world. The genetic material in these collections provides the foundation for researchers to develop new crop varieties to meet the evolving challenges of agriculture in a changing world.

In 2024, the network's combined budget was approximately \$1 billion, less than 1 percent of the world's total annual agricultural R&D spending. The future of its budget is uncertain.

There are several international centers that for historical reasons are not members of the CGIAR, but nonetheless are critical elements of the international agricultural research system and should be guided by the same principles.

RECOMMENDATIONS

To maximize the impact of international research now and into the future, CGIAR and the centers must refocus their strategy and further streamline their governance and operations. We propose seven goals for the new era:

1. A renewed and explicit strategic focus: Enhancing sustainable productivity growth

International agricultural research centers should anchor their work in their longstanding and unique core competency—the development of production system technologies and practices—in service of the strategic objective of enhancing sustainable productivity growth. Many have strayed from this path.

Sustainable productivity growth requires increasing output for a given unit of input *while reducing or reversing unintended consequences for environmental and human health, including nutrition*. It builds on the land-sparing goal of sustainable intensification to consider the overall efficiency of the system, accounting for its externalities. There are often inherent trade-offs across yield, environmental, and human health dimensions. CGIAR and the research centers must move beyond a paradigm in which progress in one domain must come at the expense of another. It should be their mission to advance innovations that optimize outcomes across them.

Agricultural production system technologies and practices can include management practices to improve soil, water, and input management; alternative agricultural inputs and tools; and higher performing crop, fish, or livestock genetics or biosafety practices. They address not just yield, but natural resource and input use efficiency, as well as reduced pre- and post-harvest losses.

These are areas of core competency for the international agricultural research centers, where they can contribute the most, and where there is no real substitute for their role.

This strategic refocus—sustainable agricultural productivity growth as the north star and integrated production system technologies and practices the path to get there—will maximize the centers' impact. In adopting this approach, they do not lose sight of the broader societal impacts they seek to influence. Rather, they pursue them through the centers' particular set of tools—agricultural innovations—with demonstrable productivity gains as a non-negotiable outcome.



A PROLIFERATION OF GOALS


Many international agricultural research centers have strayed from their core competencies. While CGIAR's historic focus was on crop breeding for productivity, CGIAR's current strategy outlines an overly complex array of priorities. It establishes eight science programs, a “scaling for impact” program, three “accelerators,” and five “impact areas” covering 13 concepts. The impact areas span today's greatest development challenges: climate change adaptation and mitigation; environmental health and biodiversity; nutrition, food security, and health; gender equality, youth, and social inclusion; and poverty reduction, livelihoods, and jobs. This is no clear organizational roadmap, no basis for the prioritization of scarce resources.

The impact areas rightfully acknowledge the potential multidimensional impacts of agricultural innovation, and many are incorporated into our concept of sustainable productivity. However, by treating each impact area as a separate goal in its own right, the CGIAR risks losing sight of the centers' core comparative advantage and unique role in global development. Through mission creep, it dilutes the impact of scarce resources.

THE IMPORTANCE OF SUSTAINABLE PRODUCTIVITY GROWTH

Productivity gains do more than increase food supply. They lower food prices, raise wages, and free up labor, generating more disposable household income. This has widespread benefits for the community and broader economy, including creating employment opportunities and improving children's nutritional outcomes. For these reasons, agricultural productivity gains are generally two to three times more effective in reducing poverty in developing countries than gains in industry or services. In countries facing pronounced food insecurity, poverty, and population growth, static agricultural productivity and declining per capita food supplies undermine all aspects of development and security.

Globally, most food is consumed close to where it is produced; in developing countries, the question of whether enough food exists is often a local one. Because of this, accelerating agricultural productivity growth is especially critical in regions where food demand is rising fastest—most notably, sub-Saharan Africa.



2. A new donor approach: Long-term strategic investments, rather than short-term projects

There is consistent evidence across scientific disciplines that long-term, flexible funding most effectively advances innovation. It allows scientists to focus on science rather than fundraising and grant administration. It allows institutions to adopt a long-term, integrated approach to the full scope of a given strategic challenge, rather than embark on a series of short-term projects tackling different aspects of it.

Despite this, donors can be drawn to passing fads in development approaches and niche projects with short-term outcomes—leaving the core functions of research institutions to atrophy, even as they are the foundation for all other progress. Donors increasingly earmark the majority of international agricultural research funding for specific projects, with too little regard for an overall institutional strategy. In the case of CGIAR, only about a third of the funds are provided to the network as a whole or to established strategic initiatives within it.

To achieve the greatest return on investment, donors should commit to contributing no less than 75 percent of their respective regular CGIAR research contributions as general support at the CGIAR or center level. Ideally, such funding would be unhindered by narrow directives and unique reporting requirements. Where political or institutional requirements necessitate more targeted investments, donors can still maximize impact by supporting established research capabilities, platforms, or programs rather than narrowly defined projects.

This offers advantages for donors:

- **Greater impact from every dollar invested.** Flexible funding allows scientific leaders to allocate resources where they can deliver the greatest benefits for food security, agricultural productivity, environmental sustainability, and rural livelihoods.
- **Stronger and more resilient research institutions.** Unhindered funding supports the scientific talent, infrastructure, partnerships, data systems, and long-term capabilities that underpin breakthrough innovations but are often difficult to finance through project-specific grants.
- **Improved efficiency and lower transaction costs.** Reducing the proliferation of highly tailored grant agreements allows researchers and managers to spend less time administering projects and more time delivering research outcomes.
- **Better strategic alignment.** Flexible funding enables CGIAR and its centers to coordinate investments across disciplines, regions, and programs, ensuring resources are directed toward the most pressing challenges and opportunities.
- **Enhanced capacity to respond to emerging threats and opportunities.** Climate shocks, pest outbreaks, market disruptions, and geopolitical changes often require rapid action. Flexible funding provides the agility needed to respond effectively.
- **A stronger partnership between donors and science.** By empowering scientific leadership to make evidence-based investment decisions, donors help create an environment where research priorities are guided by expertise, impact potential, and long-term development needs.

3. Leadership in transformational innovation: Creating a network to pursue select long-term, high-ambition objectives

Achieving global food security demands both steady, incremental progress in sustainable agricultural productivity and transformational breakthroughs that fundamentally redefine what is possible. International agricultural research centers are essential to delivering the continuous flow of innovations, practices, and capacity-building that farmers across the developing world depend on. This foundational work must remain the core mission.

International centers are also uniquely positioned to do something more. Their expansive global networks, deep understanding of developing-world contexts, and ability to convene diverse stakeholders give them a distinct advantage that stand-alone philanthropic initiatives, individual national systems, and even leading universities simply cannot replicate when they embark on frontier science investments.

International centers should therefore catalyze powerful multi-institution undertakings on a set of transformational, high-stakes objectives, targeting the most critical challenges in productivity, nutrition, resilience, and environmental sustainability. The focus should be on objectives where coordination across institutions adds the greatest value and where the potential for impact in the developing world is highest.





4. A commitment to excellence: Achieving the state of the art

Many centers' reputations as state-of-the-art research institutions have diminished over the years, as other institutions acquire more advanced technology and increasingly recruit the best talent. The centers should make technological modernization and talent recruitment an integral aspect of their growth strategies, even if it means sacrificing scope to strengthen capacity in a narrower set of areas. It is the responsibility of the centers to bring the best that science can offer to the challenges facing the developing world.

5. A commitment to collaboration: Making multi-center work the norm

International agricultural research centers have long struggled with the bureaucratic friction common to any group of adjacent organizations—competing for funding, staff, partners, and visibility; duplicating efforts; and fragmenting in pursuit of shrinking resources rather than coordinating to expand them. Countless millions of dollars and staff-hours have been spent attempting to fix this through process reform and structural reorganization, with little to show for it.

The reason is cultural, not structural. No amount of reorganization will produce genuine collaboration if the underlying incentives reward competition. Centers must therefore commit to shifting their cultures so that targeted, results-driven, and merit-based collaboration is the norm. This starts at the top: leaders who model collaborative behavior set the tone. Practical measures can reinforce the shift: enhanced information sharing capabilities and expectations; promotion criteria that incorporate peer reviews from other centers; the normalization of short- and long-term secondments to support collective efforts; funding opportunities that promote multi-institution teams; and a greater proportion of flexible financial support to reduce competition for earmarked funding.

Centrally led, multi-center efforts are critical in a few areas, but most are more effective and efficient when they are the result of organic collaboration spearheaded by the centers themselves.

6. Streamlined governance: Transitioning to decentralized coordination

The CGIAR's governance structures are top-heavy, expensive, complicated, and resistant to program prioritization. They create frustration, invite derision, and make fundraising more, not less, difficult. The CGIAR itself—the umbrella organization—maintains a headquarters in southern France that performs administrative functions at great cost without clear commensurate benefits.

The functions of the CGIAR umbrella organization should be re-envisioned. It should be a small coordinating body focused on supporting and empowering the centers, rather than an independent superstructure. To achieve this transformation, the CGIAR should assume a decentralized and virtual structure, with staff based across the centers. CGIAR staff could be reduced to a small team.

The system-level functions that are needed should be handled by drawing on the centers' own capacity, with coordination treated as a core part of CGIAR culture rather than imposed through burdensome external mandates. Where the center of gravity for a particular topic is clear, that center should lead coordination across the system. CGIAR staff should only assume coordinating functions that cannot reasonably be assumed by a center, such as:

- Allocating funding contributed to the system
- Acting as a single point of entry to new donors or partners
- Representational duties, including in coordination with the Rome-based agencies
- Administrative support for board and network convenings
- Coordination and standardization of data, intellectual property, and the management of genetic resources
- Coordination of system-wide research agendas for key shared priorities

These system-wide functions are critical but limited, and driven by focused scientific leadership rather than bureaucratic process. They should be underpinned by expertise, mutual respect, and strong collaboration with the centers' leadership—not extensive process or a proliferation of bureaucratic fiefdoms.

7. A commitment to cost efficiency: Achieving economies of scope and scale

CGIAR centers' administrative costs can and should be lowered through consolidation, institutional alliances, and sharing of administrative services. A consolidation review should consider any centers with an annual budget of less than \$50 million and any group of centers with complementary offerings that could be more effective when integrated.





**Food Security
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FSLC believes the United States should renew and intensify its commitment to building global food security.

We are dedicated to developing a nonpartisan Blueprint for U.S. Leadership in Global Food Security, detailing actionable recommendations for U.S. policymakers.

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**Crawford
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The Crawford Fund for Food Security seeks to increase Australia's engagement in international agricultural R&D.

We raise awareness of the benefits—for both Australia and developing countries—of investment and involvement in work for food and nutrition security and the many other impacts of agricultural research.

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