

MAINSTREAMING SCALING INITIATIVE CASE STUDIES

*The CGIAR of International Agricultural
Research Centers*

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Mainstreaming Scaling:
A Case Study of the CGIAR of International Agricultural Research
Centers

By

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A Case Study for the Initiative on
Mainstreaming Scaling in Funder Organizations

For the Scaling Community of Practice

www.scalingcommunityofpractice.com

Preface

The Scaling Community of Practice (CoP) launched an action research initiative on mainstreaming scaling in international development organizations in January 2023. This initiative has three purposes: to inform the CoP members and the wider development community of the current state of support for and operationalization of scaling in a broad range of development funding agencies; to draw lessons for future efforts to mainstream the scaling agenda in the development funding community; and to promote more effective funder support for scaling by stakeholders in developing countries. (For further details about the Mainstreaming Initiative, see the [Concept Note](#) on the COP website). The Mainstreaming Initiative is jointly supported by Agence Française de Développement (AFD) and the Scaling Community of Practice. The study team consists of Richard Kohl (Lead Consultant and Project Co-Leader), Johannes Linn (Co-Chair of the Scaling CoP and Project Co-Leader), Larry Cooley (Co-Chair of the Scaling CoP), and Ezgi Yilmaz (Junior Consultant). MSI staff provide administrative and communications support, in particular Leah Sly and Gaby Montalvo.

The principal component of this research is a set of case studies of the efforts to mainstream scaling by selected funder organizations. These studies explore the extent and way scaling has been mainstreamed, and the major drivers and obstacles. The case studies also aim to derive lessons from each donor's experience, and, where they exist, their plans and/or recommendations for further strengthening the scaling focus.

The present case study focuses on the CGIAR: an international network of Centers engaged in agricultural research. The study focuses on a combination of organizational changes and innovations that supported mainstreaming scaling during the period of 2015 to the present. Some of these changes explicitly targeted scaling, such as the inclusion of specific scale targets in the [CGIAR 2016-2030 Strategic Results Framework](#) and particularly the creation and diffusion of the Scaling Readiness approach by a growing number of internal research efforts. Others were part of an ongoing organizational reform process whose goal was to improve efficiency, collaboration, accountability, and impact at scale by greater centralization of the system. This reform effort is ongoing and has taken the form of the One CGIAR reform process. While not directly targeting scaling, many of these reforms support efforts to center scaling within CGIAR's research activities.

The report was prepared by Richard Kohl under a consultancy financed by the Oak Foundation. The report benefited from comments by Larry Cooley, Julien Colomer, Marco Ferroni, Julie Howard, Mark Huisenga, Johannes Linn, Marc Schut, and Graham Thiele. It is based on a review of publicly available CGIAR documents and interviews with several key informants within the CGIAR, whose anonymity is being respected to allow for candid responses. The generosity of both the reviewers and key informants in terms of their time is gratefully acknowledged. The opinions expressed are solely those of the author alone and in no way reflect the views of the CGIAR or any of its Centers or staff, nor those of the Scaling Community of Practice or any of its members or financial supporters.

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Acronyms

AA	Action area	MDGs	Millenium Development Goals
AGRA	Alliance for a Green Revolution in Africa	MSI	Scaling Community of Practice Mainstreaming Scaling Initiative
BMGF	Bill and Melinda Gates Foundation	NARES	National Agricultural Research and Extension Systems
CIAT	International Center for Tropical Agriculture	PMM	Portfolio monitoring and management
CIMMYT	International Maize and Wheat Improvement Center	PPPs	Public-Private Partnerships
COP	(Scaling) Community of Practice	PU	Portfolio performance unit
CRP	CGIAR Research Programs	PRMF	Performance and Results Management Framework
GCC	Grand Challenges Canada	R4D	Research for development
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit	RTB	CGIAR Research Program on Roots, Tubers, and Bananas
IDO	Intermediate development outcome	SDGs	Sustainable Development Goals
IITA	International Institute for Tropical Agriculture	SFSA	Syngenta Foundation for Sustainable Agriculture
ILRI	International Livestock Research Institute	SLO	System level objectives
IPSC	Independent Science and Partnership Council	SRF	Strategic and Results Framework
IPSR	Innovation Package and Scaling Readiness	USAID	United States Agency for International Development
IRRI	International Rice Research Institute	VBP	Varieties, breeds, and practices
KPIs	Key performance indicators	VBPT	Varieties, breeds, and practices and non-technical innovations

Executive Summary

This paper presents a study of efforts to mainstream scaling within the CGIAR. The CGIAR is a network of research centers, partnerships and cross-center Initiatives that conduct research on agrifood systems to produce global public goods—research and innovations. These goods are targeted to improve productivity, income, food security, health and nutrition, and other goals in the Global South, particularly for small farmers and other marginalized populations. It is currently undergoing a fifteen-year long reform process that has led to greater integration of what were previously a largely independent and autonomous set of research centers. An important component of that process has been to mainstream scaling, particularly by ensuring that innovations are “scaling ready,” developing scaling strategies, supporting their implementation, and tracking progress towards impact at scale. These efforts provide an excellent opportunity for a case study of mainstreaming.

The CGIAR is mostly not a donor or development funder¹ unlike many of the organizations being studied as part of the Scaling Community of Practice’s (COP) Mainstreaming Scaling Initiative (MSI). The CGIAR is primarily a research organization funded by the contributions of international donors. Nonetheless, there are several reasons to include it in the MSI. First, it is one of the largest sources of innovation in the international agricultural development space with a roughly \$800 million annual budget and presence in nearly one hundred countries. Second, it has made significant efforts and progress in mainstreaming the scaling of innovations over the past decade. As innovation has become a major focus of international development in the last twenty years, we believe the CGIAR mainstreaming journey will be of great interest to other innovators and funders of innovation.

The origins of the CGIAR Centers and system are in the Green Revolution, often lauded as one of the great cases of successful scaling up in international development. As such, in one sense, one could say that scaling is in the system’s DNA. On the other hand, while many CGIAR innovations have gone to scale, until recently scaling was not a major focus for either CGIAR Centers or individual researchers. The assumption was that improved technology would scale organically by sharing genetic materials, varieties, and breeds with national actors, principally the institutions of national agricultural research and extension systems (NARES). Historically, partnerships with private seed companies were relatively limited.

Things changed considerably after the 2007-2008 food crisis which led to increased funding for agri-food research. The greater global attention and increased funding for research was accompanied by pressure from donors for CGIAR administrative reforms, including demands for increased accountability and greater impact at scale. The ensuing reform process culminated ten years later in agreement to create a much more centralized system, the so-called One CGIAR. That reform process, and the One CGIAR in particular, both explicitly included mainstreaming of scaling as well as reforms that were supportive of or facilitated scaling. Thus, the major drivers of mainstreaming were donor pressure and CGIAR leadership’s response to that pressure. Bottom-up innovation and support for scaling from researchers interested in scaling and system change frameworks and tools played a critical complementary role.

As a result of mainstreaming, scaling has been integrated into the CGIAR’s mission and vision.² Scaling strategies are being developed for the 32 Initiatives under which centrally funded CGIAR investment is now organized. An in-depth scaling framework and toolkit has been developed, tested, and refined. Originally called Scaling Readiness, and now the Innovation Packages and Scaling Readiness (IPSR), the framework and tools focus on getting innovations scaling ready, identifying, and mobilizing scaling

¹ Interviews with some bilateral funders did mention that some funding is passed through to other organizations. In these cases, the donors provide general direction and consulted on the use of funds.

² The CGIAR Research and Innovation Strategy 2022-2030 (2020) which specifically mentions working in innovation systems and scaling.

partnerships and tracking scaling progress. As with most innovating organizations, actual scaling is left to implementing partners at the regional, national, and local levels. The CGIAR is now in the early stages of rolling out IPSR throughout the organization with the goal of having more innovations ready for scaling and to support portfolio monitoring and management (PMM). This dual-use aspect of IPSR, scaling and portfolio management, was critical to its being mainstreamed.

Mainstreaming scaling is still largely limited to those activities covered by the central Initiatives (as well as the Initiatives themselves) i.e., the centralized or pooled portion of the CGIAR budget. This is currently around 31 percent of the total annual budget. Mainstreaming of IPSR only began a couple of years ago and is occurring within the environment of major organization-wide reform, which has been both challenging and supportive. While the number of innovations to which scaling readiness have been applied and/or included in PMM are small, they are growing rapidly. The internal target is that by end of 2024, ninety percent of CGIAR Initiative innovations will be reported under the IPSR PMM approach. The approach has already begun to scale to bilateral projects implemented under CGIAR Centers, as well as by partner funders.

Institutionalization and internal rollout of IPSR and scaling has advanced in some areas more than others. Substantial efforts have been made to build awareness, encourage utilization, and provide training. These have been accompanied by allocations of human, financial, and institutional resources to support scaling, including identifying a unit responsible – the Portfolio Performance Unit (PU). At the same time, changes in internal incentives and organizational culture to support scaling are in their early days. It is unclear whether the necessary investments will be made to support the use of IPSR as utilization grows.

Whether or not the CGIAR approach to mainstreaming scaling will be successful remains to be seen and will serve as an interesting experiment in mainstreaming scaling organizational change in general. Factors favoring success are: (a) pressure from donors for impact at scale will continue as 2030 and the deadline for the Sustainable Development Goals (SDGs) approaches; and (b) the obvious advantages of a portfolio management approach for accountability. The principal challenges are whether: (i) needed resources will materialize as uptake grows; (ii) the necessary changes in internal practice, culture and incentives can be realized; and (iii) the almost complete reliance on partners to do the actual scaling will deliver impact. The current approach also has several weaknesses, among them being largely supply driven and top down, and relying too heavily on data from national sources to track progress once scaling has been handed off to partners.

To address these and other issues, the paper has several recommendations. First, as the application of IPSR to individual innovations (and finding the supporting resources) is still in its early days, more vocal and visible leadership and support for this from senior management would help. Second, there is a bit of a "build the airplane as you're flying it" approach to the rollout of IPSR and PMM. While this is no doubt largely a result of the pressurized reform environment of the last couple of years, it would be helpful to take a step back and develop a written, multi-year strategy with measurable milestones for the rollout and utilization of IPSR and PMM.

Third, the CGIAR should look for areas to achieve economies of scale and scope in the administration and application of IPSR, including putting some functions in a central unit. Centralized production of country analyses of context and stakeholders could serve as a basis for individual efforts, and one wonders whether identifying and developing relationships with partners might also benefit from higher-level relationship management and coordination.

Fourth, investment and greater attention are needed to increasing grassroots participation in applying IPSR and in primary data collection relevant to scaling progress in-country. Historically, those sources have been highly variable in terms of reliability and validity. Greater investment into its own data collection and increased quality assurance and technical support for in-country sources it relies upon is

needed. Given the CGIAR's strong capacity in cutting-edge genetics, one example of this would be to invest in selective sampling and tracking of diffusion through DNA fingerprint analysis in farmers' fields.

Finally, while it appears that in these early days of rolling out IPSR adequate financial resources have been committed, there is yet no commitment of the kind of resources that will be needed to implement IPSR institution wide as well as support scaling more generally. Even the scaling through partnerships that the CGIAR envisages takes significant financial and human resources, not the least of which are to create, manage and support those partnerships with scaling implementers. There is a risk that in an organization whose primary purpose is research and innovation and where resources are scarce, the resources needed will be underestimated and a low priority. This risk is reinforced by an implicit assumption that the necessary scaling partners exist and have the capacity and resources of their own to take CGIAR innovations to scale. Resource mobilization for scaling by both CGIAR and its partners needs to be a priority. Otherwise, the potential impact at scale contained in CGIAR research and innovations will not be realized.

The CGIAR case yields some important lessons for mainstreaming. First, the fact that the IPSR tool was developed internally and organically by staff has probably facilitated its adoption and increases the chances of successful mainstreaming. While donor pressure and management response to that pressure was the key driver, having this internal framework available helped advance mainstreaming more rapidly. While Monitoring, Evaluation, Accountability and Learning was not a major initial driver, it is likely to play a key role in sustaining operationalization of IPSR and PMM.

Second, using a scientific and applied research approach to designing their scaling framework gave it credibility in what is essentially a scientific organizational culture. It also resulted in a more substantive scaling framework than is common among large international organizations and is largely aligned with best practices in scaling. Third, centralized funding seems to have been a significant facilitator of mainstreaming, especially when combined with the fact that CGIAR funding decisions are annual. Unlike the multi-year replenishments of other international organizations, this funding mechanism facilitates quick feedback on progress and accountability to donors for mainstreaming scaling. (It unfortunately also adversely affects the stability of funding and long-term planning and investment decisions).

Perhaps most important for mainstreaming was the fact that IPSR can be, and is being, used both for scaling readiness AND to conduct portfolio management. This dual-purpose function allowed management to address donors' twin demands for accountability and impact at scale with one tool. Portfolio monitoring has enormous potential as it evolves to include portfolio management, and hopefully eventually to inform investment decisions regarding research and innovations as they move through the various stages of development and scaling.

Future progress in mainstreaming will be heavily influenced by what happens to the reform and centralization process, and to One CGIAR in particular. One CGIAR has received substantial pushback internally and from some Centers and its ultimate structure and implementation are uncertain. Centralization is probably more favorable to progress in mainstreaming, especially if accompanied by an increase in the share of pooled funding. However this turns out, these multiple and ambitious efforts and commitments provide important lessons and insights for other international development organizations, especially those involved in research and innovation.

Introduction

This paper presents a study of the experience of mainstreaming scaling within the CGIAR.³ The CGIAR began as a set of relatively autonomous and independent research centers that conducted research on agrifood systems to improve food security and resilience. Its purpose is to produce global public goods — research and innovations — targeted to the Global South, particularly small farmers, and other marginalized populations.

Unlike many of the other case studies in the Scaling Community of Practice's (COP) Mainstreaming Scaling Initiative (MSI), the CGIAR is not a donor or development funder.⁴ The Centers receive funding from a variety of international donors; the Bill and Melinda Gates Foundation, UKAid, U.S. Agency for International Development, and the World Bank are among the largest current contributors.

Scaling was not an explicit focus of CGIAR Centers and researchers until recently, though many innovations did go to scale. Its origins are in the Green Revolution, widely considered one of the great examples of scaling and development impact in the post-colonial era. Scaling was affected by sharing genetic materials and new plant varieties, animal breeds and agricultural practices (VBPs) generally with national actors, most often national agricultural research and extension systems (NARES). Those actors in turn used these materials (and their financial and human resources and capacity) to either scale or create and then scale their own VBPs. CGIAR Centers also supported scaling through some systems change; they regularly provided (and continue to provide) training, technical assistance and capacity building to NARES and others.⁵ Its important accomplishments in scaling notwithstanding, research and innovation has remained the CGIAR's primary focus.

After the world food crisis of 2007-2008, agricultural research and innovation became a major donor priority. With increased funding came greater donor expectations that research and innovation would lead to impact at scale at much higher rates, as well as for greater accountability and internal efficiency. Context is also important - during this period there was a broader focus on aid effectiveness and accountability, as well as country ownership. All of that translated into increased external pressure for CGIAR reform and internal recognition that change was needed.

The CGIAR began a series of reforms in 2009. The CGIAR Research Programs (CRPs) introduced at that time were precursors to the present Initiatives under which all centrally funded research is currently organized. This process ultimately led to substantial centralization and integration under what has now become the One CGIAR. That reform process, and the One CGIAR in particular, included mainstreaming of scaling along multiple dimensions as well as reforms that were supportive or facilitated scaling. Indicative of the fact that the impetus for change was not solely external, in parallel to top-down reforms a group of researchers were creating and evaluating their own scaling framework and tool, the Scaling Readiness approach,⁶ what later became the Innovation Package and Scaling Readiness (IPSR). This approach included integrating scaling considerations into the research and innovation process (to be

³ The name CGIAR derives from the initial acronym, which is no longer used, the Consultative Group on International Agricultural Research.

⁴ The CGIAR system and individual centers allocate funds internally to support specific research and training efforts. It also provides small grants to NARES, but most of the support and capacity building provided to NARES (and universities) by CGIAR centers is in the form of in-kind training.

⁵ CSISA was established by USAID in 2009 in South Asia to improve production of staple cereal production - maize, rice, and wheat - whose growth had stagnated in prior years. It had a goal of benefiting eight million small farmers, primarily in Bangladesh, India, and Nepal. It was jointly implemented by CIMMYT, IFPRI and International Rice Research Institute.

⁶ See Murat Sartas et al. (2020a) and <https://www.scalingreadiness.org/>

“scaling ready”), identifying and organizing partnerships to do the actual scaling, and providing technical support.⁷ In addition to scaling readiness, IPSR is used for portfolio management and monitoring (PMM), including monitoring progress of innovations from scaling readiness to sustainable adoption and implementation at scale.

The mainstreaming of IPSR in both its scaling readiness and PMM dimensions is a major focus of this paper. The One CGIAR process, and the mainstreaming of scaling and utilization of the IPSR, are still very much works in progress. Both will continue for several years and are likely to evolve in terms of their design, intended goals, and operationalization.

The CGIAR case is included in the MSI because it is a global research organization and the largest partnership for agricultural research and innovation in international development. While many CGIAR innovations have historically scaled on an *ad hoc* basis, the current mainstreaming of IPSR is creating a **systematic, scientific** approach to scaling that will hopefully lead to full integration into internal operations, procedures, and decisions; more, smarter, and better scaling efforts; and ultimately greater impact at scale. The fact that what has occurred to date even has that potential is a significant accomplishment and the lessons learned from CGIAR’s mainstreaming journey should be of interest to other institutions contemplating mainstreaming scaling. We believe the CGIAR case can inform other innovators, funders of research and innovation in general, and organizations working in the agri-food space. As mainstreaming at the CGIAR is ongoing, it represents a living experiment whose process and ultimate results will bear watching.

The study is organized into five sections. The background provides a brief description of the CGIAR, its origins, institutional structure, and how it has historically approached scaling. The second section on systems reform picks up this narrative, focusing on the drivers of system reforms that accompanied the rapid increase in CGIAR funding following the Global Food Crisis of 2007-2008. To minimize the length of the paper, the history of 2010-2015 is provided in an annex. The main text covers how these drivers and developments led to a significant effort at mainstreaming scaling after 2015. It particularly focuses on how the reforms that culminated in the current One CGIAR system facilitated scaling in general and particularly the institutionalization and rollout of the IPSR framework for both scaling readiness and portfolio management.

The fourth section focuses on challenges facing mainstreaming scaling within the CGIAR. This includes issues such as aligning internal incentives, providing adequate resources for scaling, and challenges associated with relying on handoff to partners to implement scaling. The fifth section provides recommendations to deal with these challenges and other issues. Principal among them are suggestions for a written scaling strategy for mainstreaming scaling readiness and portfolio management, increased grassroots participation in scaling readiness, partial centralization of the scaling function internally, and greater investment in primary data collection of progress in scaling, rather than relying on national partnerships. The paper closes with conclusions for the development community as to what can be learned from the CGIAR mainstreaming case.

Background

History and Institutional Structure

The CGIAR started with four Centers in 1971 and eventually peaked at eighteen Centers from around 1990 through 2015. From 1971 until 2009, individual Centers were largely autonomous in terms of their

⁷ Several external key informants mentioned in interviews that they assess that CGIAR invests insufficient resources in monitoring progress towards scale and scaling and relies too heavily on often unreliable in-country sources with little effort at quality assurance.

research agenda and activities, funding, internal administration, and organization. Centers have been primarily staffed by research scientists in a variety of relevant fields closely related to agricultural VBPs such as agronomists, entomologists (insect experts), plant and animal geneticists, biologists, and soil scientists. As the research agenda expanded, some Centers like the International Institute for Tropical Agriculture (IITA) and International Maize and Wheat Improvement Center (CIMMYT) added staff with health, social science, and other professional expertise.⁸ Centers operated very much like universities. Researchers' incentives in terms of status, pay, and promotion were largely based on publications in peer-reviewed journals, citations, and presentations at international conferences. Because of this academic focus, research and the development of VBPs often did not adequately take into consideration issues affecting scalability such as contextual conditions on the ground, market demand or constraints on end users. That said, new VBPs were developed that regularly achieved significant adoption at scale.

Approach to Impact at Scale

While it is difficult to generalize across multiple Centers and decades of experience, in general widespread adoption of new VBPs was expected to occur spontaneously, primarily through collaboration with NARES. In fact, an important part of CGIAR efforts at creating international public goods has been to build capacity and strengthen NARES, though the impact of this support has not achieved its full potential because of limited funding for these chronically under resourced institutions.⁹ In this context, scaling was not seen as an activity that needed explicit attention and investment of time and resources by CGIAR Centers; it happened organically.

This approach to scaling¹⁰ through partnerships or handoffs to NARES was somewhat effective through the mid-1980s. Up until that time in many Global South countries, agriculture, especially staple cereals, export commodities or other strategic products, received significant government support.¹¹ The viability of this approach to scaling changed in the mid-1980s and 1990s because of structural adjustment and policy changes in many developing countries that often eliminated state or parastatal institutions; interventions such as marketing boards and input suppliers (sometimes one and the same); subsidized inputs; and cuts in the funding and staffing of public extension services, research organizations and breeding and multiplication programs. As a result, while NARES and other public sector actors were neither well-funded nor had strong capacity to support scaling prior to structural adjustment, afterwards they had either been abolished or were even less capable and resourced.

Perhaps equally if not more importantly, there was a belief that private sector institutions would spontaneously emerge to play the roles previously played by the public sector. However, in many cases private sector actors and institutions did not emerge to replace (adequately) these public institutions.

⁸ IITA added Partnership in Delivery and CIMMYT its Sustainable Agrifood Systems program "which brings together global agricultural economics, systems analysis on agrifood innovations and agricultural systems for development." <https://www.cimmyt.org/work/sustainable-agrifood-systems/>

⁹ According to our key informants, for the last couple of decades funding for training and collaboration between NARES and CGIAR has been more limited and there was a general perception that international resources primarily flowed to CGIAR and were not shared with NARES. One of the drivers for One CGIAR was to improve the relationship with NARES. Hopefully One CGIAR, despite its own challenges in getting consistent funding, will lead to increased funding for such support given CGIAR's reliance on NARES for data and local cooperation.

¹⁰ The term "scaling" was not used in that period; to the extent it was discussed it was called Research for Development (R4D).

¹¹ This was especially true in countries where NARES or parastatals developed, registered, released, and produced foundation and breeder seed, multiplied public varieties in significant quantities, and sold them at subsidized prices (which often crowded out any potential private sector role in that crop). These public institutions on the seed side were often paralleled by ones on the output side like marketing boards that purchased and marketed individual crops and often supplied inputs, providing small farmers with both upstream and downstream linkages to the market.

Nor were there major efforts by national governments and donors to spur the development of market systems until the last fifteen years or so.¹²

As a result of all these factors, in many countries, particularly in Sub-Saharan Africa, the uptake of new VBPs plateaued and stagnated or even regressed as farmers reverted to older VBPs.¹³ For example, in many crops in Sub-Saharan Africa the average age of non-traditional varieties being planted has increased or stagnated since the 1990s,¹⁴ and yield and productivity have persistently lagged levels found of the same crops in middle- and high-income countries.¹⁵ This was the context facing the CGIAR and its funders when the world food crisis hit in 2007.

System Reform and Mainstreaming Scaling

The Global Food Crisis of 2007-2008: Increased Funding and Drivers for Reform and Mainstreaming of Scaling

The story of mainstreaming scaling in the CGIAR begins with the reaction of global donors to the food crisis of 2007-2008. After an extended period during which agriculture was a relatively low priority and funding for international agricultural research stagnated, donors substantially increased funding in reaction to the rapid escalation of food prices, global shortages of staple cereals and other key commodities, and increased hunger. Total funding for CGIAR Centers roughly doubled between 2007 and 2015. While donors had been grumbling for decades about the inefficiencies of having nearly twenty independent Centers, more funding and greater political prioritization was accompanied by greater donor pressure for reforms. Donors wanted greater impact and results at scale, increased accountability, and improved efficiency. A reform process began within CGIAR in 2009, accelerated after 2015 and ultimately culminated in a commitment in 2019 to integrate the system that was formalized as the One CGIAR. The One CGIAR now exists, though its design and ultimate form has been and remains the subject of ongoing debate which will likely continue for the foreseeable future.

¹² There was little investment in strengthening and filling gaps in value chains, which were often weak. Regardless of the motivation or necessity in terms of achieving fiscal sustainability and eliminating market distortions, it is now widely acknowledged that structural adjustment policies paid insufficient attention to its impact on the effects on public sector institutions, and the need to proactively support private sector institutions where the former were weakened or eliminated. See Franz Heidhues and Gideon Obare, (2011) "Furthermore, while SAPs continued to emphasize the benefits of unimpeded markets for all societies, they also demonstrated a lack of understanding of how particular markets work and how culture and habits of thought shape 'African markets' to operate differently from 'Western markets'. The then President of the WB admitted that the WB had ignored the basic institutional infrastructure, without which a market economy simply cannot function ..." p. 62.

¹³ "Genetic drift is a random process that can lead to large changes in populations over a short period of time. Random drift is caused by recurring small population sizes, severe reductions in population size called "bottlenecks" and founder events where a new population starts from a small number of individuals."
<https://www.apsnet.org/edcenter/disimpactmngmnt/topc/PopGenetics/Pages/geneticdrift.aspx#:~:text=Genetic%20drift%20is%20a%20random,a%20small%20number%20of%20individuals.>

¹⁴ See for example, Margaret McEwan et al. (2021) They state: "In Africa, vegetatively propagated crops (VPCs), small grains and legumes hit a 40% adoption ceiling for modern varieties, while the average age of a variety found in a farmer's field is typically 8 years or more".

¹⁵ In 2022, wheat yields in the US and India were 2.93 and 2.75 metric tons/hectare, as opposed to 1.98 and 1.00 in Kenya and Nigeria. <https://ourworldindata.org/crop-yields> downloaded 4 Dec 2023. The question of why invest in continually developing new varieties that were not going to scale rather than scaling those that had already been developed seems obvious, but to the best of our knowledge, this question was never seriously raised either within the CGIAR system nor by its funders, at least not until the 2007-2008 food crisis. In part this seems because investment in global agricultural research for development stagnated between around 1990 and 2008 and was not a major concern or priority of global donors. (See Nienke Beintema and Ruben G. Echeverria, (2020), particularly Figure 4, p. 5). Again, until the last fifteen years, the need for complementary investment in value chains and market systems was neither something the CGIAR centers did nor on the donor agenda.

Complementing the top-down driver of donor pressure were bottom-up developments. Over the same period there emerged new tools and frameworks for scaling and initiatives by researchers, research teams and informal internal networks to promote and integrate those tools, and scaling and systems change more generally. Beginning around 2010, these researchers individually and later collectively published articles and began developing analytic frameworks and tools to integrate innovation and complex adaptive systems theory into new approaches to agriculture innovation systems and practice.¹⁶ These efforts gained momentum in 2015 with the creation and subsequent testing of the Scaling Readiness approach by Marc Schut, Murat Sartas, and others under the CRP on Roots, Tubers and Bananas (RTB).¹⁷

A third driver was the support for these bottom-up initiatives by management of their respective Centers or research programs,¹⁸ and subsequently support for and adoption by the leadership of the CGIAR as a whole. A final driver of scaling was the creation and funding by German International Development Agency (GIZ) of a scaling advisors program that placed individual scaling advisors at several CGIAR Centers to support scaling.¹⁹ This added additional numbers, credibility, and weight to those internal bottom-up efforts.

While the reforms of 2009-2023 were arguably continuous, we have divided them into two stages, from 2010-2014, and 2015 onwards. The reforms in the first period are discussed, for those interested in the detail, in Annex 1. Suffice to say that by 2015, donors perceived the first round of reforms and its results as inadequate. The second round began with the important Strategic and Results Framework (SRF) 2016-2030 and culminated in the creation and ongoing implementation of the One CGIAR. We turn to phase II in the next section.

Phase II reforms and Centralization under the One CGIAR

The reforms begun in 2015 were designed to improve efficiency and impact by creating a more unified structure and administration, including a full set of new governance and management institutions. The new system's institutions were centralized in Montpellier, France. In terms of program/project design, a two-stage pre-approval and approval process was put in place with common design principles and

¹⁶ See for example see Wigboldus et al. (2016). and Marc Schut et al. (2015)

¹⁷ Other key contributors to this overall line of thinking included [Laurens Klerkx](#), Cees Leeuwis, and [Seerp Wigboldus](#). The first two were, until recently, professors at Wageningen whereas Wigboldus has been a researcher at various Development Innovation and Plant Research centers associated with Wageningen. Other innovations were also percolating within the system, such as the Scaling Scan by Lennart Woltering, Floortje Jacobs and Jan Ubels, the GenderUp Scaling Tool from Wageningen, the Horticulture Innovation Laboratory at the University of California – Davis, and the MELIA&SPA framework from the International Water Institute., See <https://www.researchgate.net/publication/331231780> The Scaling Scan A practical tool to determine the strengths and weaknesses of your scaling ambition, <https://horticulture.ucdavis.edu/genderup-scaling-tool#:~:text=GenderUp%20is%20a%20discussion%2Dbased,bottlenecks%20to%20increase%20innovation%20users>. https://www.iwmi.cgiar.org/Publications/Other/PDF/monitoring_evaluation_learning_and_impact_assessment_and_scaling_prepare_dness_and_action-a_process-based_framework.pdf

¹⁸ Most of these actors were either simultaneously held faculty or researcher positions or were recent Ph.Ds. (or some combination of the three) from Wageningen University (WU) in the Netherlands. These researchers shared a background and strong interest in complexity, systems thinking and holistic approaches including participation.

¹⁹ In brief, this program, which is ongoing, began in 2017 by placing a scaling advisor at CIMMYT and eventually expanded to seventeen advisors at the same number of Centers. These advisors served as internal advocates and intellectual resources to support scaling, as well as working on many scaling efforts. They helped create an intellectual climate and legitimation of scaling as a science in a very 'scientific' organizational culture along with tools like the Scaling Scan. Along with the systems-oriented researchers mentioned above Scaling advisors and their helped innovate, support, and implement various scaling activities, initiatives, and tools.

theories of change for the CGIAR Research Programs.²⁰ In late 2019, the newly created System Council voted to support a new organizational structure to create an even more centralized system called One CGIAR.²¹

These reforms were accompanied by a second SRF published in April 2015.²² The 2016-2030 SRF²³ contained several elements that were particularly relevant to, supportive of, or explicitly required mainstreaming of scaling. These included a commitment to: “[work closely] with governments, national research partners, non-governmental organizations and the local private sector to ensure our research is **up- and out-scaled**” (p. 8, emphasis added).

An entire subsection of the 2016 SRF was devoted to scaling up that is worth quoting at length:

Achieving impact at scale is one of the greatest challenges facing the development community. Research by CGIAR and its partners can support the drive to disseminate innovations, but the scaling up effort must be led by national institutions, supported by regional or international development organizations where appropriate. The private sector also has a major role to play. To support scaling up we will adopt a five-fold strategy of:

- Deliberate prioritization of research efforts to target constraints of wide applicability and regions of concentrated poverty and hunger;
- Close alignment of efforts by Centers and CRPs in selected areas, to capture synergies;
- Coordinated planning with implementation partners so that the knowledge of CGIAR and the financial and programmatic resources of these partners complement each other;
- Commitments from clients and national partners to make complementary investments and policy reforms where CGIAR is investing; and
- Institutionalization of a culture of regular monitoring and evaluation to gauge progress towards impact and to learn from experience.²⁴

Two points from this are worth emphasizing. First, the SRF clearly states that scaling will be done by implementation partners, clients, and national partners. That statement doesn’t reflect that during this period there was an ongoing debate as to whether the CGIAR should be responsible for taking innovations to scale. If so, would this be done by staffing up CGIAR Centers with experts in business and the social science, by contracting out, or some other mechanism? While this debate continued for several years after 2016, the view contained in the 2016 SRF ultimately triumphed; the CGIAR would be involved in coordination and providing technical assistance to partners but would NOT play a lead role in actually doing the scaling.²⁵ Second, the section reflects the influence of those who saw systems and

²⁰ Efforts to standardize research design and theories of change remains a work in progress with a wide variety of approaches still being used. Based on our key informant interviews with CGIAR staff.

²¹ An external development was the key role of the Alliance for a Green Revolution in Africa (AGRA) in creating viable seed companies that have the capacity to take up new varieties. Between 2010 and 2018 AGRA’s efforts results in a four-fold increase in the number of seed companies in selected African countries. Without private seed companies as potential users, most varieties developed by CGIAR centers would have no local partners to take them to scale. AGRA also played a key intermediary role of linking these fledgling seed companies to individual Centers.

²² The first SRF was published in February 2011.

²³ CGIAR. (2015)

²⁴ Ibid, p. 24

²⁵ This approach included an increased commitment to building capacity of partners, particularly NARES under the section Partnership and Capacity Development Strategy.

systems change as a necessary part of scaling, though once again actual system change was also delegated to "... national partners to make complementary investments and policy reforms."

The subsection on scaling in the 2016 SRF was accompanied by an entire section on accountability: "Holding Ourselves Accountable." It highlighted the need to shift from a focus on process, activities, and financial accountability to outcomes and impact; accordingly, the CGIAR adopted a results-based management approach. It also emphasized the need to explicitly create indicators and measure the relationship between research and "outcomes at scale."²⁶

The SRF contained targets for several System Level Objectives (SLOs) that related to impact at scale. For example, the SRF committed the CGIAR to the following objectives:

- "350 million more farm households have adopted improved varieties, breeds or trees, and/or improved management practices."
- "Improve the rate of yield increase for major food staples from current <2% to 2.5%/year."
- "500 million more people, of which 50% are women, without deficiencies of one or more of the following essential micronutrients"²⁷

Bottom-Up Drivers of Mainstreaming Scaling: The Roots, Tubers and Bananas Research Program and the Scaling Readiness approach

Between 2010 and 2015, several relatively new Ph.Ds. (and older researchers) joined the CGIAR either full-time or as advisors and consultants with a strong interest in innovation, scaling, systems change, and complex adaptive systems. These researchers saw the flaws and challenges in the CGIAR's relatively narrow focus on research, especially the lack of a systematic approach to creating strategies for integrating scaling into research and innovation and moving innovations towards impact at scale. They particularly emphasized the need for innovation and scaling to be contextualized in systems and systems change.

Among them was Marc Schut, who joined the CRP on Integrated Systems for the Humid Tropics (HumidTropics) in 2014 as a researcher to work on agricultural innovation. Together with Ph.D. researcher Murat Sartas and Prof. Cees Leeuwis from Wageningen University, they started doing research on innovation system approaches and looking for opportunities to integrate such approaches into CGIAR programs. This work produced several ideas for structural changes as to how the CGIAR could support innovation and scaling²⁸ in a more meaningful way.

When funding for HumidTropics was not renewed,²⁹ it signaled to some that support for systems change from donors and CGIAR senior management was limited, and the initiative needed to continue at the working level. Dr. Schut and colleagues were able to take the ideas that had emerged, what they began

²⁶ Written at a time when most of the collective efforts of the CGIAR system still took the form of research programs, each CRP would be responsible for creating its own results framework that include impact pathways and theories of change. At the time of publication of the SRF in 2016, there were 15 CGIAR centers and 15 CRPs. The latter included Agriculture for Nutrition and Health; Aquatic Agricultural Systems; Climate Change, Agriculture and Food Security (CCAFS); Dryland Cereals; Dryland Systems; Forests, Trees and Agroforestry; Grain Legumes; Humid Tropics; Livestock and Fish; Policies, Institutions and Markets; Maize; Global Rice Science Partnership; Roots, Tubers and Bananas; Water, Land and Ecosystems; and Wheat.

²⁷ The CGIAR recently published an analysis of the extent to which the CRPs contributed to the achievement of the 2016-2030 SRF targets (both the CRPs and that SRF were 'retrospectively retired' at the end of 2021). The study found that the 2022 interim target for this indicator – farm households adopting improved varieties et al. – was met by 158%, i.e., 158 million households compared to a target of 100 million. The other targets met were people who exited poverty, reduced greenhouse gas emissions and hectares of forest saved. Progress on dietary targets was much less. See Deborah Templeton (2023).

²⁸ See Cees Leeuwis et al. (2018)

²⁹ CRPs emphasized cross-center collaboration that was explicitly intended to achieve synergies, improve efficiency and, most importantly, produce greater impact at scale. Despite this fact, Humidtropics and other CRPs that were working on systems approaches did not receive funding for continued work in that area. A review of the CRPs sheds some light on this development. See M. Holderness et al (2021).

to call “innovation and scaling system science,” to the CRP RTB where management was supportive. The CRP RTB proved to be fertile ground for the work.

Under RTB, the Scaling Readiness approach was born.³⁰ Scaling Readiness was originally developed for four purposes: (i) to ensure that core (often technical) innovations made clear what complementary innovations were necessary for impact, bringing both types of innovation together in what were called Innovation Packages; (ii) to integrate scaling considerations into research program design and innovation development, e.g. the nature of demand and other interests and concerns of end users and other stakeholders; (iii) to anticipate and address potential obstacles or constraints (“bottlenecks”) to scaling; and (iv) to identify scaling approaches, primarily in the form of partners who could either commercialize the innovation or address and affect systems changes where systems constraints were among the obstacles identified. Scaling strategies in the Scaling Readiness approach include addressing bottlenecks, improving scaling readiness, and identifying and supporting implementing and funding partners for scaling.³¹ Box 1 provides greater detail on the Scaling Readiness tool.

Box 1 Scaling Readiness Tool

It is beyond the scope of this paper to describe, let alone analyze, the Scaling Readiness approach in detail. According to Sartas, Schut, et al.³² it is based on the following principles:

1. Scaling is subject to a specific spatial and temporal context
2. Innovations scale as part of packages (packages include core and complementary innovations or enablers)
3. Use of evidence to identify bottlenecks for scaling strategy development
4. Scaling requires multi-stakeholder agreement and coalition formation
5. Scaling is an emergent and unpredictable process of change³³

Scaling Readiness measures the readiness and use of innovations along a 0-9 step scale. Readiness measurement is based on the National Aeronautics and Space Administration’s technology readiness levels and tracks innovations from “idea” to being “proven.” Use measurements track the penetration of innovations in networks: adoption and use by partners, other organizations and networks, and ultimately broad use by intended end-users or clients.

The principal use of the Scaling Readiness approach was to identify bottlenecks to scaling and develop strategies for overcoming bottlenecks (innovations rated as having low readiness and use must have significant bottlenecks). Strategies to address and relieve bottlenecks must be realistic and resource efficient; they might include substituting proposed innovations for others that are cheaper or more readily available. Scaling strategies need to consider existing context and stakeholders. Scaling requires

³⁰ There are numerous articles and publications describing the SR tool and its various applications. An extensive history and analysis of its origins and testing can be found in Marc Schut et al. (2022) “Scaling Readiness: Learnings from Applying a Novel Approach to support Scaling of Food System Innovations”, Chapter 3 in Thiele et al., eds. Roots, Tubers and Banana Food Systems Innovations. See also the PowerPoint presentation Murat Sartas, (2021) “Scaling Readiness in a Nutshell” 5 April, ICARDA.

³¹ At the same time, researchers at other centers began to take an interest in scaling. For example, the International Water Management Institute (IWMI) produced several tools and frameworks to support scaling. CIMMYT, led by its GIZ advisor, developed what it called “scaling scan.” In this paper, we focus on the IPSR tool given its prominent role in the One CGIAR reform process and its increasingly wide adoption as tool to create, assess, and improve scalability, to develop a scaling strategy both for individual IPs and for PIs, as well as its growing role in monitoring progress on scaling and portfolio management generally. See Thai Thi Minh et al. (2021) and, Thai Thi Minh, (2022)

³² Murat Sartas op cit. (2020a)

³³ Sartas et al. argue that even if an innovation has low potential for impact, it still may achieve scale or widespread adoption, which is why use, or potential for use, is important. “Whether or not an innovation is likely to scale depends on who and how many users are already using it, and how such users are positioned in the innovation network. Thus, it makes sense to distinguish between network environments in which the innovation still receives considerable support and protection (e.g., a project or intervention), and network environments in which it has been used without any form of support (e.g., as part of livelihood systems).” *Ibid*, p. 3

multi-stakeholder agreement, coalition formation and negotiation. Reflecting the strong systems emphasis of the authors, they emphasize that scaling is embedded in complex livelihood systems full of tensions and interdependencies such that in most cases scaling is beyond the capacity of a single stakeholder. As such, scaling is an “emergent and unpredictable process of change ... [which] require(s) reflexive monitoring and learning.”³⁴

The authors of the Scaling Readiness approach went on to describe the five major steps.

1. **Characterize:** Profile stakeholder networks, innovations, and scaling context
2. **Diagnose:** Assess the Scaling Readiness of the innovation in its scaling context
3. **Strategize:** Identify activities and partnerships to overcome bottlenecks for scaling as part of the scaling strategy
4. **Agree** (iteratively with Strategize): Validate the feasibility and acceptability of the scaling strategy
5. **Navigate:** Monitor, evaluate and learn about scaling strategy implementation.

Implicitly, it appears that somewhere between Steps 4 and 5 someone is implementing the agreed upon scaling strategy.

Importantly, the developers of the Scaling Readiness approach noted that it could also be used to “monitor and manage a portfolio of R4D investments to increase the overall scaling readiness of their innovation portfolio”³⁵ as they move innovations to scale along pathways determined by the twin dimensions of innovation readiness and use. Effectively, by using the twin scales of readiness and use, the tool is like the stage gating approach often used by other innovation developers.³⁶

The Scaling Readiness approach can also be used for portfolio monitoring and management. First, it tracks the progress of individual innovations and the entire innovation portfolio along the stages of the innovation-scaling pathway. Second, it identifies the innovation’s relevance to multiple organizational goals such as addressing the gender, youth, climate change, etc. Third, it monitors progress towards these goals as well. Finally, portfolio managers might eventually use the tool for input into major resource allocation decisions.

Mainstreaming Scaling and Implementation of the One CGIAR

The creation and implementation of One CGIAR has allowed for continued progress on mainstreaming. In 2020 the CGIAR released its CGIAR 2030 Research and Innovation Strategy which updated the goals of 2016 SRF as well as how they would be attained. It included an even greater emphasis on a “system-transformation approach” that “achieve(s) impact through innovation systems of partnerships, networks, assets, and institutions”.³⁷ Impact at scale would be achieved through a combination of innovation, capacity development of end users, public and private sector partners, and policymakers, and provision of policy advice. The CGIAR 2030 Research and Innovation Strategy reaffirmed that the system was “not to attempt to lead systems transformation efforts, but rather to make catalytic contributions of science, expertise, and innovations that can inform strategic alliances.”³⁸

As part of One CGIAR, something called Portfolio Initiatives (for ease of use, we refer to them as Initiatives) replaced CGIAR Research Programs as cross-center collaborations. Unlike CRPs, which included roughly eighty-five percent of CGIAR research, the thirty-two Initiatives are limited to

³⁴ *Ibid*, p. 5

³⁵ *Ibid*, p.9

³⁶ See for example the figures referring to Cooper’s Stage-Gate process of innovation (Figures 1 and 3), where figure 3 describes the six-stage process that Monsanto uses. Michael Boehlje, Maud Roucan-Kane, and Stefanie Broring (2009)

³⁷ CGIAR. (2022)

³⁸ *Ibid*. p. 23

centralized funding, which has fluctuated between twenty-five and thirty-five percent of the total over the past decade (see Figure 1 below). (This shift is important because current efforts to implement IPSR, and mainstream scaling generally, are largely limited to centralized funding.) That said, for centralized funding, Initiatives are the defining and organizing mechanism for research efforts. The Initiatives are grouped within three Action Areas (AA): Systems Transformation, Resilient Agrifood Systems and Genetic Innovation. Each AA has a managing director (who is often a director general of a CGIAR Center), with accompanying staff, budget, and other administrative functions.

Initially, each Initiative was required to develop an *ex-ante* scaling strategy, another sign of how serious the CGIAR commitment to scaling had become. Unfortunately, in practice, in the compressed period of getting One CGIAR up and running in 2021-2022 and reorganizing all centralized research into these Initiatives, creating well-developed scaling strategies proved infeasible. Instead, a compromise was adopted in which as of 2023 each Initiative would have a theory of change, goals, and an accompanying Results Based Framework. Scaling strategies would be developed in the future as the Initiative's management and administration was firmly established and greater experience with the innovations each Initiative contains. However, according to our interviews, even these theories of change have a wide variance in quality and consistency of approaches used, suggesting that the challenges of creating either an overarching theory of change or scaling strategy for a large set of loosely related innovations are not easily addressed.

In due course the Scaling Readiness tool was renamed the Innovation Package and Scaling Readiness (IPSR)³⁹ and concurrently its potential use for PMM has begun to be actualized. The IPSR's portfolio management, reporting and monitoring function aligns closely with one of the primary drivers of mainstreaming: the need to provide accountability to donors. In fact, this role may have been the primary motivation for One CGIAR's management to encourage the internal dissemination and widespread adoption of the IPSR tool. This may be an important lesson for other organizations, in that mainstreaming scaling can be greatly facilitated when it can be combined with organizational objectives, especially accountability, particularly given its importance for donors that report to legislatures or multi-county governance boards.

CGIAR is mainstreaming IPSR as its approach to integrating scaling into the research and innovation process. Initial rollout started with the centrally funded Initiatives. The pooled portfolio is a natural starting point for this to reach critical mass and start generating value. The strategy for scaling up IPSR beyond that is a voluntaristic one based on example; One CGIAR management hopes the results from the centralized portfolio will inspire staff from the non-pooled activities to take it on. Another advantage of starting with the pooled funding is that all pooled research uses a common set of indicators, whereas in the non-pooled space there is a huge diversity (probably around ten thousand indicators) which is not conducive to piloting/growing a novel approach beyond a single project. All Initiatives are expected to use IPSR to develop scaling strategies in the next few years.

The CGIAR has institutionalized IPSR primarily through its the CGIAR Portfolio Performance Unit (PU), which has had the primary responsibility for both rolling it out and ongoing administration. The PU grew out of the previous Programs Unit that oversaw technical reporting by the CRPs; it was formally established in 2022. As of January 2024, the PU had eleven full-time staff: five CGIAR employees and six consultants. However, the hundred staff trained as resource people for IPSR are, by design, dispersed throughout the system. The PU has four key functions:

- Help tell CGIAR's impact story i.e., oversee delivery of technical reporting⁴⁰.
- Provide decision makers with data, analytics and insight on portfolio performance and results.

³⁹ Concurrently the IPSR was being regularly simplified, refined and made more user friendly.

⁴⁰ <https://storage.googleapis.com/cgiarorg/2022/06/CGIAR-Technical-Reporting-Arrangement-June2022.pdf>

- Catalyze adoption of best of class performance and results management solutions such as adaptive management, and IPSR.
- Progressively harmonize with non-pooled projects on key parameters in line with institutional priorities.

The PU and other staff responsible for putting together and implementing mainstreaming of the IPSR over the last few years received significant internal support from senior leadership.

In addition to the PU, mainstreaming of scaling has been institutionalized by embedding it into other system management institutions, as well as within the three AAs and the Initiatives.⁴¹ This has been accompanied by creating or mobilizing existing human resources to support mainstreaming efforts. Support is provided by IPSR experts/ facilitators that have been trained over the course of 2023. “Grass roots” field researchers and managers instrumental in developing the IPSR have been integrated into system level positions to help institutionalize and ensure the application of successful operationalization of the above steps.

The system has taken a gradual and largely voluntary approach to individual researchers applying IPSR to their innovations. This has taken the form of a multi-pronged approach: advocacy and awareness raising to generate knowledge and understanding of its purpose and utility; financial and management support, and technical assistance and training to provide the skills to apply it.⁴² To date over one hundred staff have gone through the IPSR training. Modest budgetary support was available for individual researchers to apply the Scaling Readiness tool to their individual Innovation Packages that allowed them to either hire someone or access consulting support to help implement the IPSR. Starting in 2024, CGIAR is piloting a Scaling Fund from which CGIAR and partners working on innovation packages with high impact potential can apply for funds to support them in scaling strategy implementation.⁴³ Each initiative has a dedicated budget line to support use of the IPSR and scaling. According to our key informant interviews, actual expenditures on scaling for 2022-2023 are likely to have been quite limited given how recently the Initiatives were created and the preliminary nature of their scaling strategies.

There are some early signs that projects and researchers outside of pooled funding are taking up the IPSR. Two examples of uptake outside pooled funding are Technologies for African Agricultural Transformation which is funded by the African Development Bank, and ILRI, which has started to apply it to a selection of bilateral Bill and Melinda Gates Foundation-funded innovations. Under the recently updated and signed Integrated Framework Agreement, all CGIAR centers have agreed to work towards harmonized reporting of pooled and non-pooled projects, which should facilitate utilization of IPSR by the latter projects.

The commitment to scaling has yet to be translated into incentives affecting the pay, promotion, or status of individual researchers. However, according to our interviews, it has been integrated into key performance indicators for managing directors of Action Areas and for Center and Initiative directors general. Action Areas, Centers and Initiatives are all expected to reach certain achievements related to scaling goals. While no formal linkage has yet been made linking ongoing funding to progress in achieving impact at scale, it seems to be understood implicitly that successful innovations that

⁴¹ CGIAR 2030 provided greater detail on how it would work to scale with its partners. It announced Regional Integrated Initiatives that would facilitate impact at scale as a key vehicle for co-design and co-delivery of innovation, capacity development, and policy change with regional partners.

⁴² The various efforts include creating a website, increasing training capacity, several in-person training courses, an annual Week of Scaling conference, and a self-guided online training that has been attended by over two thousand employees of CGIAR and other development sector organizations. See <https://innovationandscaling.thinkific.com/>

⁴³ A similar Scaling Fund was implemented under the CRP on Roots Tubers and Banana and provided approximately USD 5 Million in support of the scaling of eight innovation packages between 2018 and 2021.

demonstrate readiness to scale have a greater chance of getting continued or more funding or both, and the converse.

Box Two summarizes the major features of mainstreaming in the CGIAR.

Box 2 Summary of Mainstreaming in the CGIAR

Principal Drivers:

1. Pressure from donors for greater impact at scale, efficiency, and accountability.
2. Proactive response to donor pressures by system leadership to support mainstreaming of IPSR in both its portfolio management and scaling dimensions.
3. Bottom-up innovation in scaling and systems change tools and frameworks and support from local management.
4. The GIZ scaling advisors program.

Definitions and Goals of Scale and Scaling:

1. **Scale.** Key informant interviews indicated that at the micro level, defining scale for individual innovation packages is left to the relevant research team. At the macro/systems level, impact at scale seems to be in some ways purely quantitative numbers of adopters of new innovations and in other cases has a more qualitative aspect since system goals are expected to impact multi-dimensional poverty in areas that are difficult to measure quantitatively, such as gender equity. CGIAR 2030 adds systems change more explicitly. Specific quantitative goals exist for innovation adoption. These goals are not stated in comparison to total need or demand, or relative to some current baseline.
2. **Scaling.** Scaling is understood as being achievable through multiple pathways, including advancing research and innovations to scaling readiness, scaling innovation packages through partnerships, and providing capacity building and policy advice.
3. **Role in Scaling.** The CGIAR sees its role in scaling as catalytic; bringing its innovations to scaling readiness; organizing scaling partnerships, developing scaling strategies with those partners, and providing technical support and policy advice to those partnerships, not as a scaling implementer.⁴⁴

Operational Changes:

1. Adopted IPSR at the central system level (as a priority) to be used to support scaling strategy design and for portfolio monitoring and management.
2. Rollout of a voluntary approach to achieving widespread use of the IPSR through internal advocacy and awareness building, and provision of technical support and expertise, including modest funding. That support takes the form of extensive training of staff from various Centers, expertise embedded in management and staff in the three Action Areas who provided technical support and assistance, and modest funding.
3. Extensive use of IPSR as a portfolio management tool and publishing of annual dashboards.
4. System-level scaling goals have been turned into goals and key performance indicators for managing directors of the Action Areas, for the director generals of individual Centers, and leadership of the thirty-two Initiatives.
5. Responsibility for IPSR and PMM embedded in the PU with eleven full-time staff.

⁴⁴ “[T]he scaling up effort must be led by national institutions, supported by regional or international development organizations where appropriate. The private sector also has a major role to play.” CGIAR (2016) p.24

Challenges to Mainstreaming Moving Forward

This section reviews the challenges to mainstreaming scaling within the CGIARs to date, how they have been addressed, and what challenges remain. It is followed by recommendations on how to address them as well as improve and advance mainstreaming overall.

The Size of the Challenge and Future of Ongoing Reform

The CGIAR has roughly 9,000 staff, a \$771 million budget (2022), and a presence in roughly half of the Global South. Around thirty-one percent of the budget is currently centralized or pooled funding. It experienced a doubling of its budget between 2007 and 2014. This was combined with a greatly enlarged set of objectives (already underway) from a focus on productivity, incomes, and food security to including issues like health, nutrition, gender, and youth employment. One cannot overstate the size of the organizational reform task and effort required over the last fifteen years, and even more so during the push towards centralization in the last few years. While mainstreaming scaling has been greatly facilitated by and is a major component of the One CGIAR organizational change process, and on net a positive, it is also occurring in a particularly challenging context with many competing objectives and changes going on simultaneously.

Mainstreaming is mostly happening within activities supported by pooled funding, facilitated by the common set of rules and indicators, with the expectation that this will create a critical mass that will then spread to the roughly eighty-five percent of CGIAR activities under CRPs. That said, there is increasingly a number of non-pooled funding taking on IPSR, and expectations that underlying approaches to research design approaches, rules and monitoring will be harmonized between pooled and non-pooled funding. The future of mainstreaming scaling is likely to be substantially affected by the extent to which centralization continues and is effectively implemented and, concomitantly, by future trends in the share of pooled funding and the success of overall harmonization efforts.

Internal Culture and Incentives Remains a Challenge

The second obstacle has been the internal culture and concrete incentives at CGIAR and center levels. While the IPSR's basis in evidence-based scientific research is a plus for acceptance by a science-based organizations, for many staff and middle management scaling remains something they see outside of their areas of interest, responsibility and expertise. It is hard to tell, but it does seem that ongoing resistance and pushback to the One CGIAR centralization includes the mainstreaming scaling agenda. As noted above, efforts to rollout IPSR include awareness and capacity building for scaling and ISPR, technical and financial support and a variety of modest incentives to use the IPSR, and a few mandatory requirements to apply it within pooled funding. We were not able to find any evidence in CGIAR documentation or key informant interviews that the criteria for staff promotion, salaries or performance includes explicit incentives to use the IPSR or linked to progress in scaling innovations. This seems congruent with the gradual and voluntary approach to usage of the IPSR based on adoption driven by the positive examples and successes of others.

Similarly, to date it does not seem that progress along the innovation and scaling pathway is yet being used to make decisions about which research efforts receive financial support and other resources. Implicitly there is a presumption that those Initiatives, Centers, and researchers that do adopt and apply these tools are more likely to get resources, but when or even whether such decisions will be taken may be a few years away. Nonetheless, given the investment being made in advocacy, awareness building, and training around the IPSR and portfolio management and scaling, it is likely that staff must be aware of the direction in which the "wind is blowing." Time will tell whether the current mix of mostly encouragement and intangible incentives will be sufficient for adopting the IPSR and creating an internal culture with a scaling mindset without those financial incentives.

Partners, Resources, and Capacity to Do Scaling

The hybrid or catalytic model of scaling relies on handing innovations off to partners. The catalytic approach to scaling is nearly universal among innovation funders and innovators working in agri-food systems and international development, but that does not mean it is working⁴⁵ for innovators in general or will work for the CGIAR. This catalytic approach assumes that such partners exist and have the implementation capacity, financial resources, and incentives to serve in that role. As noted above, historically CGIAR Centers have had the strongest relationship with national public sector actors, particularly NARES and universities. The resources and scaling capacity of those organizations remains uneven despite recent commitments by the CGIAR and others to renew and redouble their efforts to support NARES, including the impressive impact of efforts by AGRA and others multi-stakeholder platforms. Where, whether, and to what extent these organizations, or potential private sector partners, have what it takes to function as effective scaling partners and the motivation to do so remains to be seen.

The same holds true for private sector pathways and affecting systems change. In many animal or crop/country combinations, value chains or market systems are weak and have gaps. While CGIAR researchers can partially address bottlenecks by modifying and adapting the innovation package, and provide policy advice, they will have to rely on partners to address those bottlenecks in public policy enabling environments and market systems. Some donors and multi-donor efforts have been made in recent years to strengthen the private sector, such as in seed systems, and with success. Nonetheless, as with the public sector, the landscape is uneven.

It remains a challenge whether the CGIAR can find enough public, private, and donor-funded project partners with the necessary capacity and financial resources to achieve its scaling goals. Creating and managing partnerships is itself challenging and deserves unpacking. The “handoff to partners” approach often assumes that creating, managing, and supporting partnerships is a frictionless transaction that takes little effort or resources. The scaling literature has repeatedly emphasized that the “panacea of partnerships” systemically and substantially underestimates the time, effort, and resources it takes to create, manage, and support partnerships. Qualitative research conducted by USAID’s Bureau of Resilience, Environment and Food Security found that for every \$1.00 spent on research and development, multinational seed companies spend \$1.20-\$2.40 on delivery. In the case of scaling international agriculture innovations, the resources, mechanisms and structures required remains substantially underfunded.⁴⁶

Creating and managing partnerships is also likely to be an internal challenge for CGIAR, particularly in terms of human resources. The CGIAR is investing in training its staff in the use of IPSR, and it has created regional and country conveners whose mandate is to manage the partnerships and networks in which CGIAR operates. Nonetheless, staffing up partnership management will be required. As this is not the skill set of most agri-food scientists, it remains to be seen whether human resource capacity will keep up with what will hopefully be growing demand as more innovations apply IPSR.

⁴⁵ For example, this is the approach that has been adopted by Grand Challenges Canada and all the Grand Challenges programs that exist. It is also the approach that USAID’s Feed the Future Agricultural Innovation Laboratories and the Syngenta Foundation for Sustainable Agriculture have adopted. See the studies in the Mainstreaming Initiative <https://scalingcommunityofpractice.com/resources/case-studies/>

⁴⁶ The description of the Regional Integrated Initiatives in CGIAR 2030 suggests that investors will need to be found to support them. “The priority regional challenges to address through these Initiatives will draw on triangulation of global significance, based on scientific evidence, regional relevance, based on consultation and evidence of stakeholder demand, and investor preference, based on evidence of support for financing.” [Emphasis Added] CGIAR 2030, p. 25

Application of a Portfolio Monitoring and Management Approach: Setting Portfolio Goals and Tracking Progress

One advantage of a portfolio approach is that an organization can invest in many innovations, recognizing that only some need to succeed for it to achieve its overall goals. However, portfolio management requires knowing the potential impact for all portfolio components, and ideally their co-variance or synergies, and then having explicit targets for the success rate needed to reach system impact goals. While, to the best of our knowledge, the PMM is not yet being used for this purpose, it seems like this could eventually be its most important application. The portfolio approach has the added advantage of avoiding creating perverse incentives for scaling efforts to simply achieve large numbers (transactional scaling) without considerations of impact relative to the size of the problem or long-term sustainability (transformational scaling). To achieve its maximum potential and impact, eventually CGIAR will need to have target goals for the success rate of its innovation portfolio. Individual research proposals will need to make explicit realistic, feasible potential for long-term sustainable impact at scale and identify risks and contingencies to achieving that impact.

A major challenge to the PMM is the reliability of data once an innovation is handed off to local actors. Historically the CGIAR has not had a strong result monitoring system of impact on the ground; it has relied largely on reporting on things like adoption of new VBPs or impact on poverty, health, and nutrition from its partners such as NARES who vary widely in resources or the reliability of their own monitoring systems. If the PMM system is to be credible in terms of accountability, and be used to motivate scaling, it needs solid data on innovation progress along innovation-scaling pathways. In the medium run, solid data will be necessary to guide future investment decisions; portfolio management is untenable if the outcome data is not dependable.

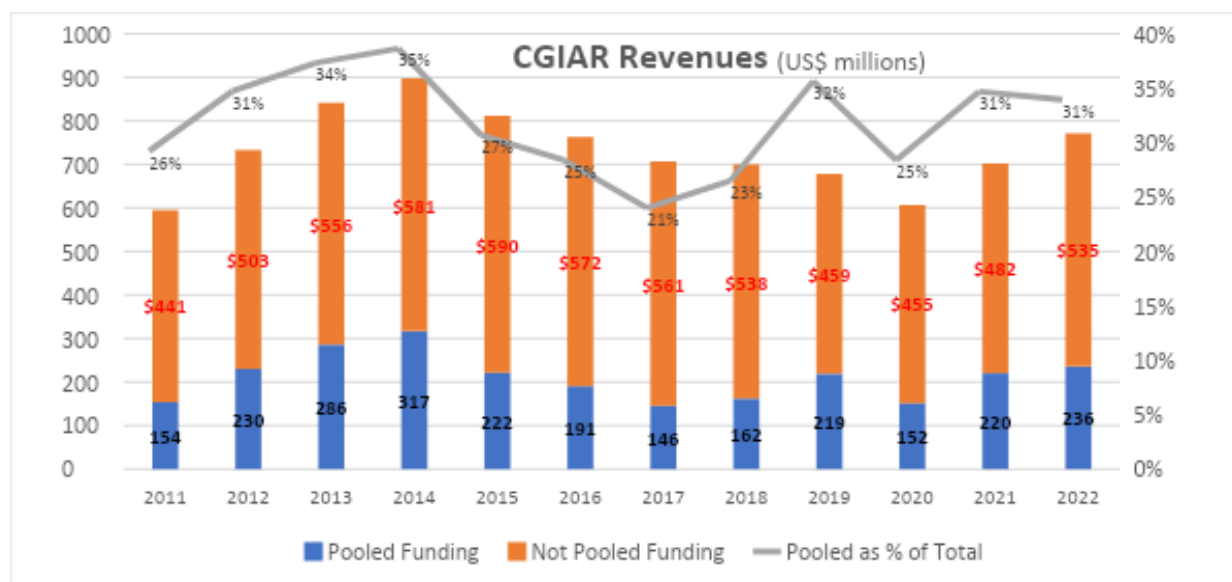
A second challenge will be the tension between using its portfolio approach for internal and external accountability and tracking evidence for evaluation, learning and adaptation. This is an issue that bedevils many donors who, despite statements to the contrary, tend to focus monitoring on accountability for short-term goals and disbursements rather than learning and adaptation. This issue appears to have already arisen and is being dealt with, suggesting that internal review and learning processes within the CGIAR are quite strong and robust in terms of quality assurance and self-reflection. Nonetheless the issue is likely to resurface in other ways and will require continued attention.

A Much Broader – Unfunded? - Mandate For Impact and Financial Resources

Because the rollout of the IPSR is relatively recent, scaling and integrating scaling into things like Initiatives or AAs are in their early days, and the current budgetary requirements to support those are relatively small. The resources required will no doubt grow as more innovations move further along in the process. While ongoing reforms may generate efficiency gains for the CGIAR, donors should not expect that scaling nor portfolio management will be self-funding. CGIAR success in mainstreaming scaling will require substantial additional resources such as a significant Scaling Fund, regional and country convenors and other scaling “infrastructure” to organize, manage and support scaling partners.

One cannot help but be concerned as to whether the needed resources will be forthcoming. As Figure 1 below shows, the history of donor funding to the CGIAR, and to centralized funding, is not encouraging. Not only did CGIAR funding decline steadily from 2014 to 2020 (and even more so if these numbers were inflation-adjusted), but pooled funding accounted disproportionately for the decline, falling from thirty-five to twenty-five percent of the total. The overall decline in funding and shift away from centralized funding is not supportive of mainstreaming scaling as it puts scaling in competition with basic research, and a conflict scaling is unlikely to do well in.

However, a positive sign is that as the One CGIAR reforms moved towards reality in 2021 and in their first full year of implementation in 2022, total funding rebounded to \$702 and 771 million in 2021 and 2022, respectively, with much of this increase coming in the form of pooled funding.⁴⁷ Nonetheless, total **nominal** funding remains below levels reached in 2013-2014.



One hopes that with continued evidence of progress in reforms, scaling, and portfolio management, the 2021-2022 uptick in funding will continue, especially in pooled funding. Nonetheless, it is hard not to conclude that for the CGIAR scaling may become yet another unfunded development mandate on top of the cross-cutting themes that have proliferated in recent years.⁴⁸

Recommendations for the CGIAR in mainstreaming

We offer several recommendations for the CGIAR in terms of mainstreaming scaling.

Greater Public and Internal Vocal Support for Scaling

Clear, vocal leadership from the very top would help support scaling and the mainstreaming of approaches such as IPSR. All our key informants indicated that they had significant support from senior leadership. Nonetheless, we found few public pronouncements from senior leadership about scaling. As IPSR use becomes widely used internally, that support will need to be made explicit and frequent, and combined with resources. More public and regular statements about scaling will reinforce the top-down commitment to scaling.

Written Strategies, Timelines, and Goals for the Rollout and Utilization of IPSR and Portfolio Management

The development of a written strategy and benchmarks for mainstreaming the IPSR and scaling will facilitate future success in mainstreaming. This should be in five dimensions: (i) the rollout, adoption and

⁴⁷ <https://www.cgiar.org/food-security-impact/finance-reports/dashboard/overview/>

⁴⁸ To be clear, issues like gender, health, nutrition, youth, and climate change are all important. However, to expect development organizations like the CGIAR to take on all of these issues and integrate them into all of its efforts without any additional resources is simply unrealistic. It reflects the failure of the international community to make difficult choices about priorities, it is much easier to say yes to everything, which encourages even more claims for attention and resources on a relatively fixed quantity of resources.

utilization of IPSR; (ii) goals and a timeline for the number of innovations that will be at various stages of the SR process and of the innovation scaling pathway more generally; (iii) goals and a time frame of rolling out PMM; (iv) a time frame of achieving the CGIAR's stated scaling objectives; and (v) the financial, human and other resources needed to support higher rates of IPSR utilization and to create and manage scaling partnerships. These can be thought of as three separate strategies, one for the rollout and funding of IPSR, a second for progress on scaling, and a third for achieving portfolio goals, all integrated together.

Such a strategy should be accompanied by a clear articulation of roles and responsibilities by the various system level entities involved, as well as individual Centers, research Initiatives, and partners. The three AAs are a welcome development in that regard. Right now, scaling expertise is found at the system level in the PU, in the monitoring and evaluation unit, and in the hundreds of staff trained as IPSR facilitators.

It is not clear how all these pieces fit together. The PU is playing a key role, especially in PMM, and substantial work is being performed by an informal network, very much like its roots in the CRP RTB. Despite the role of the PU, there appears to be an assumption that every Initiative should have its own scaling expertise and resources and the primary locus of scaling. While that is working currently, a more centralized or semi-centralized process might be better as utilization increases. This might take the form of handing over some scaling tasks, such as arranging and managing partnerships to a Scaling Unit and/or to the Regional Integrated Initiatives that would have concentrated expertise and local knowledge and relationships.

It should also be accompanied by a realistic budget and allocation of human and other institutional resources. It is hard to see from available CGIAR sources what resources and investments are being made by management in AA or Initiatives, let alone whether these are being disbursed and utilized. Getting a better handle on the individual and aggregate budget, budgetary needs, and actual expenditures related to mainstreaming scaling, IPSR, and PMM would be an important first step.

Adding Other Scaling Tools in addition to IPSR

The internally developed tool of IPSR, along with other tools like GenderUp and the Scaling Scan, represent important tools that, when mainstreamed, will facilitate CGIAR efforts at scaling. The PU and other central actors should see IPSR as the first step of introducing a broader array of scaling tools and frameworks and of ongoing continuous development. In this context, external key informants noted that the CGIAR system tends to be somewhat insular and an echo chamber in the sense that researchers do not look for support or expertise outside of the CGIAR system or beyond its closest partners like Wageningen University. There is a significant literature, framework and toolkits for scaling that have been developed internationally, especially in North America, which could profitably be added to IPSR. At the risk of being self-serving, the Scaling Community of Practice can be a resource in that regard.

Centralize Context Research and Integrate Scaling Earlier in the Process

There are likely to be economies of scope in conducting the (country) context assessments needed to apply the IPSR to an innovation package. It may make sense for the Scaling Unit, (or the PU, AAs, or Regional Integration Initiatives) to produce analyses of broad country-crop/breed contexts in terms of relevant stakeholders, market systems and public sector enabling environments (and the equivalent for research in non-crop/breed areas like gender). Individual research teams could start with these high-level analyses in terms of their own scaling readiness analyses, modify and supplement them where necessary, and be able to focus their more limited time and resources on a deeper investigation into those contextual elements specific to their innovation package. While there are some advantages to scaling readiness capacity at the ground level, complementing this with a centralized (or contracted out) function and outputs would provide economies of scale and scope and a significant, system-wide impact.

Greater Grassroots Participation and Attention to the Tradeoffs in Scaling

The quality of application of IPSR, especially in developing initial designs and assessing demand and bottlenecks, would be greatly facilitated by increased participation by small farmers and other target end users. Relying on public or private sector partners for participation is necessary, but it is not enough as they are not the end users. The CGIAR Initiatives are now required to put much higher priority on partnerships, including with local public/private organizations. This seems essential for “sustainable scaling.” Context and stakeholder analysis and greater use and evidence from realistic situations – already central to IPSR – is different from participation. The CGIAR relies too much on experts in its application of IPSR, even if they are local i.e. from the national public or private sector.⁴⁹ We recommend greater attention to this issue; the Syngenta Foundation has a market segmentation assessment tool that is quite effective at involving farmers and other beneficiaries at the inception of the process of finding innovative solutions.

More Dedicated Resources for Scaling, including for Scaling Partners

While according to our key informant interviews, current financial resources are sufficient to support scaling efforts, the resources needed will increase exponentially as application of IPSR increases and hopefully gains momentum. This will particularly be the case as presumably more and more innovations become scaling ready and the CGIAR will be working hard to create, manage and support scaling partnerships with implementing organizations. As noted above, the time, effort and resources to make scaling partnerships successful are systematically underestimated.

Given recent history, the medium-term commitment of financing for the CGIAR remains uncertain. If a resource-constrained environment persists or worsens, funding for research will be preserved and funding for integrating scaling into research programs, ensuring that innovations are scaling ready, and partnerships are all likely to be cut or not forthcoming. The same is likely to be true for the human resources needed to implement IPSR and scaling internally. CGIAR funders need to be made aware of how short-sighted this is, and perhaps funding could be encouraged if there was a dedicated portion or significant amount explicitly earmarked and committed to scaling. We recommend, building on the Scaling Fund now under consideration, that plans be made to increase this significantly and used to advocate with donors for resources.

In an earlier recommendation, we proposed that the CGIAR put together a clear multi-year strategy and targets for mainstreaming IPSR and scaling generally, including a detailed budget to support scaling readiness, partnership creation and management, and technical support to scaling. While it is hard to be sure, it is highly likely that such a budget will indicate the need for significantly greater resources for scaling in the future. In that context, we recommend that the CGIAR also advocate for greater financial resources for its presumptive scaling partners, whether NARES, AGRA, private sector actors or others. It doesn't make sense for the CGIAR to increase its focus, commitment and investments in scaling only to find that the number and capacity of organizations it is handing off to are lacking. Building on the CGIAR's renewed commitment to training and technical support for NARES, this might include both technical training in scaling and, leveraging its own internal experience in organizational change for IPSR, to help those partners with their own internal change process to mainstream scaling.

Invest More in Results Monitoring

One of the major drivers for scaling in general, and IPSR, was the promise that portfolio monitoring and management has for both incentivizing impact at scale and greater accountability. We noted previously

⁴⁹ This relates more generally to the issues of optimal scaling and tradeoffs in scaling. Some of our key informants had concerns that application of the SR is still largely top down and supply-driven in terms of who makes decisions, even if it is paying more analytic attention to the needs of end users and demand and willingness-to-pay through such tools as Target Product Profiles.

that the reliance on national sources is problematic. Greater investment into its own data collection and increased quality assurance and technical support for in-country sources is called for. Given CGIAR's strong capacity in cutting-edge genetics, one example of this would be to invest in selective sampling and tracking of diffusion through DNA fingerprint analysis in farmers' fields.

Summary Lessons for Mainstreaming Scaling

The CGIAR case presents an important case study of mainstreaming as it is the world's preeminent research and innovation institution in the agri-food sector. While investments in research and innovation remain a tiny fraction of investments in international development, their importance has been clearly recognized in terms of the attention it has received, such as the huge US investment in the Feed the Future Innovation Laboratories. In terms of its research and innovation budget, the CGIAR dwarves other efforts, and thus represents an important case of a research and innovation-focused organization with huge potential for success in mainstreaming transformational scaling leading to huge impact at scale.

The most important insight from the CGIAR case is how it has tried to straddle its role and comparative advantage as a research institution while embracing scaling. Like many innovation institutions, it has embraced the notion that its comparative advantage is in developing, testing, and validating scaling-ready innovations, and it should largely confine itself to that area on the innovation-scaling pathway. Like many innovation institutions that have tried to mainstream scaling, it has embraced an approach to scaling whereby its role is to ensure that its innovations are scaling ready and then to identify and handoff to public, private, and donor-funded project partners who will then take those innovations to scale. As noted above, while this approach is widespread among innovation funders and innovating organizations, it has yet to be shown to be successful.

There are several things that are different about CGIAR's experience compared to other innovating organizations. First, the IPSR approach seriously integrates scaling into the project design and development process.⁵⁰ We know of no other official innovation donor or research organization that has done anywhere near as much to integrate scaling into innovation, even if so far it has only been applied to a fraction of the CGIAR's research portfolio.⁵¹ Certainly none remotely comparable in its size and resources.

Secondly, the IPSR tool not only integrates scaling but does so in greater depth than tools that have been applied at other international organizations,⁵² and covers more of the innovation-scaling pathway.⁵³

⁵⁰ While USAID's Bureau of Environment, Resilience and Food Security is currently rolling out a similar effort, Innovation to Impact, for its FTF Innovation labs, this is at a much earlier stage. The integration of scaling into the Syngenta Foundation's SEEDS2B efforts is much more advanced and shows what is possible in such efforts.

⁵¹ A good point of comparison are the efforts by the International Fund for Agricultural Development, which also works in the agri-food sector, though as a funder, designer, and implementer of projects rather than in research and innovation. See for comparison IFAD (2015). However, some innovation funders have made important advances in integrating scaling into their funding strategies, see for example the mainstreaming scaling case study of GCC, which has, among other things, invested extensively in Transition to Scale grants and other types of non-financial support such as coaching, accelerators, and stimulating public sector demand. The GCC case as well as a case study of IFAD can be found at <https://scalingcommunityofpractice.com/resources/case-studies/>.

⁵² USAID's Agricultural Scalability Assessment Tool is comparable in its depth, but it only covers one step in the innovation-scaling pathway. See Richard Kohl and Colm Foy (2018) Guide to the Agricultural Scalability Assessment Tool. Produced for the United States Agency for International Development by Management Systems International, under the E3 Analytics and Evaluation Project. https://pdf.usaid.gov/pdf_docs/PA00T6KX.pdf.

⁵³ USAID has been piloting its own process for integrating scaling into agri-food research called Innovation to Impact (i2i), developed and being implemented by the Soybean Innovation Laboratory. (See <https://www.innovation-2-impact.com/>) The Scaling COP expect to have a case study of the results of the i2i pilot in Phase 2 of this Mainstreaming Initiative.

It specifically requires researchers to understand the nature of their innovation as a package, and to look explicitly and early at demand, the concerns of multiple stakeholders, and other local contextual factors that might create bottlenecks, and to address them through design changes. It goes beyond “scaling ready” to identify scaling partners, organize scaling partnerships, and engage and support those partners.

Finally, the CGIAR has committed itself through the PMM side of the IPSR to monitor outcomes in terms of scale beyond where it has primary responsibility for scaling. This is bold and once again unusual, even if it has not yet been fully implemented. It is an experiment worth watching as the CGIAR works to expand this to organization-wide utilization. However this turns out, these multiple and ambitious efforts already provide lessons for other organizations, and if successful, will likely serve as a template for others, especially research organizations, to follow.

In our view, the fact that interest in mainstreaming at the CGIAR was simultaneously top down and bottom up was quite important. Other organizations have tried a largely top-down approach which has faded when faced with pushback and passive resistance from middle management and staff. The system level objectives contained in the 2016 SRF are clear, simple, and specific. IPSR may have its challenges in terms of complexity, but it was developed and tested by actual users on the ground and is aligned with a scientific organizational culture. It remains to be seen what will happen to the IPSR and mainstreaming scaling if the ongoing pushback on the One CGIAR leads to slower progress or even reversal of those overall reforms.

It bears repeating that what was critical to its success to date was its application to portfolio management and accountability as well as supporting scaling of individual innovations. While this may create tensions between the two as implementation proceeds, it is hard to imagine that scaling readiness would have advanced so far on its own. That said, portfolio management, assuming it eventually becomes institutionalized system-wide, is a huge accomplishment and a potential example for other funders. The mere fact that CGIAR will monitor and measure progress towards scale is, to our knowledge, unique among innovation organizations. If portfolio monitoring does become portfolio management and guides investment decisions, it has the potential to achieve scaling on an aggregate basis without requiring or expecting every investment to scale.

It is our view that donor pressure for accountability was equally as important for mainstreaming scaling as demand for impact at scale. Thanks to the portfolio monitoring aspects of the IPSR, donors are increasingly receiving the type of information on progress they have been asking for, so mainstreaming scaling has responded to two of donors’ major concerns and been a win-win for the CGIAR. While it is hard to know with certainty, this likely contributed to the rebound in funding in 2021 and 2022.⁵⁴ This provides an important lesson for other organizations interested in mainstreaming. Combining scaling with greater and more granular portfolio management and reporting on scaling progress and achievements improves accountability and is likely to reassure funders and increase resources.

The CGIAR case raises the thorny issue of aligning internal incentives to support scaling, or, in this case, to use the IPSR and participate in PMM. While IPSR has its origins at the staff level, this resulted in some spontaneous but limited scaling internally. The current approach appears to mix a limited number of mandatory measures (e.g., integration into Initiatives) with a voluntary, persuasive approach. It remains to be seen whether the mixture of approaches will persuade enough middle management and staff to adopt IPSR at levels that will transform the CGIAR institutionally. The fact that most current rollout is limited to pooled funding makes sense operationally but is also worrisome, especially if further progress on centralization and pooled funding slows or even reverses. This too will be one issue worth watching closely.

⁵⁴ CGIAR (2023).

In conclusion, the CGIAR's efforts in mainstreaming scaling and the IPSR and PMM put it on the forefront of mainstreaming in international development generally. It has made huge progress in integrating scaling into its mission, vision and multi-year strategies, and translating that organization-wide accomplishment into the strategies and workplans of individual Initiatives and Action Areas. This is now happening at the individual innovation package level. It has put in place a high-quality framework and toolkit, and supported that with extensive advocacy, awareness building, training and technical support. That implementation and support is led by and embedded in a central unit with significant staff and resources and complemented by resource persons dispersed throughout the organization. It has clearly identified its role in the innovation-scaling pathway and is in the process of putting into place the capacity to identify, create, manage and support partnerships with implementers who will take its innovations to scale. Its PMM approach is now being adopted by several other organizations, showing the appeal and promise of a portfolio approach.

These impressive accomplishments notwithstanding, mainstreaming scaling within the CGIAR is still in its early days. The time it has already taken, and is likely to take until fruition, confirms the general finding that mainstreaming is a five-to-ten-year process, and closer to ten than five. Continued vocal management support and effort will be required as the challenges will get harder once the initial rollout goes beyond sympathetic early adopters and the relatively modest human and financial resources needed to date. As noted in our recommendations, having a clear, explicit multi-year strategy, milestones and budget for mainstreaming scaling would help guide that process and mobilize internal and external support. Getting greater grassroots participation from smallholder farmers and other end users not only makes sense practically and ethically but is likely to increase political and therefore financial support. Mobilizing greater resources for the CGIAR and its implementing partners will be critical for the ultimate success of mainstreaming, especially to avoid any tradeoffs with the core research budget. In that regard, it would be helpful as part of the overall strategy an advocacy strategy that identifies and focuses initially on identify and supporting innovations that are the most scale ready, have the greatest potential for impact at scale, and are most aligned with both donor and local priorities. This could create a snowball effect very much aligned with the CGIAR's voluntaristic internal approach to mainstreaming. All of this is critically dependent on the quality, reliability and credibility of portfolio monitoring data, and ensuring this must be a major priority.

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Annex I. Major Reforms to the CGIAR; 2010-2015

Accountability, greater impact at scale, and greater efficiency required several reforms. These took the form of the creation of a series of system-wide strategies, repeated changes to the funding mechanisms, more uniformity in the way that (especially cross-center, systemic) research projects were designed, and eventually system-wide institutions. These included the creation of:

1. Fifteen independent, multicenter, CGIAR Research Programs (CRPs) that emphasized synergies and system-wide cooperation. CRPs and other reforms were intended to improve accountability, particularly by simplifying the complexity of reporting to multiple donors with different requirements, as well as reduce micromanagement and the burden of heavy oversight.⁵⁵ CRPs were to be the primary vehicle of achieving scale, or as was more commonly used, R4D⁵⁶ and economies of scale and scope.
2. Pooled funding called the CGIAR Trust Fund that was particularly targeted at the CRPs and achieving some (undefined) large scale impact. The Fund was supposed to, by responding to donors' needs, improve the predictability and stability of funding, particularly with a greater emphasis on unrestricted funding that was available to support system-wide needs. In principle, this strengthened central institutions relative to individual Centers and helped cover funding the costs of operating the system as whole. This consistency of funding was seen as supporting the kind of longer-term vision of impact at scale, given the internal recognition that the pathway from initial research and development to scale is often a 10–20-year journey.
3. A set of new systems institutions: a Fund Council (oversight) and Office (management and implementation), and a CGIAR Consortium with oversight by a Board and implementation by the Consortium Office. Accountability was invested in a newly created Independent Evaluation Arrangement.
4. To help support CRP design and implementation, an Independent Science and Partnership Council (IPSC) was created to advise the Systems Council on research, especially strategies for effective partnerships. Internal review systems like IPSC were expected to ensure quality and internal consistency of research proposals and programs. While initially these primarily focused on scientific quality, they eventually expanded to encompass some of the broader issues relevant to impact at scale, creating a receptive environment or synchronicity with the IPSR tools and eventually portfolio management.
5. In 2010, a donor-center conference (Global Conference on Agricultural Research for Development) created "a new Strategic Research Framework for the CGIAR integrating the work of all the Centers in a results-oriented research for development system with an integrated programmatic structure".⁵⁷ The 2011 SRF contained both goals (System Level Outcomes – (SLOs)) for scale and the methods for achieving them, with frequent references for the need for collaboration and collective action, especially with national research efforts and other external partners.

This set of reforms supported a steady increase in funding peaking at around \$1 billion in 2014.

The reforms during this period included increased attention to scaling. While scaling or R4D has been implicit in the activities of CGIAR Centers prior to 2008, the 2011 SRF was arguably the first step in explicitly mainstreaming scaling into the work of the CGIAR. The 2011 SRF mentions scaling quite clearly in two places:

For positive Research Outcomes to have a developmental impact, they then need to be scaled up and applied widely across beneficiary communities. This process will

⁵⁵ Uma Lele and (2021) "CGIAR ", Chapter 10 in Umal Lele, Food for All: International Organizations and the Transformation of Agriculture", Oxford, 18 Nov. 2021 Accessed 2

⁵⁶ The 2011 SRF mentions scale but preferred to use the much vaguer term of AR4D, i.e., agricultural research for development, which was much more in common usage at the time.

⁵⁷ *Ibid.* p.5

*generate the intended System Level Outcomes. CGIAR researchers may not be directly involved in any research at this level, but they will be engaged with the development partners, public or private, who are responsible for this scaling up. This means, specifically, that they will have involved these partners in the design of the research and the processes that have led through Research Outputs and Research Outcomes, so as to ensure that results are suitable for upscaling and have the best chance of delivering System Level Outcomes.*⁵⁸

*Working within an innovation systems perspective, the Centers will need to reach beyond the traditional research partnership in establishing broader associations with these other actors in such a way that they fully participate in the design of the research effort and are able to anticipate what will be required to scale up research outputs and develop the appropriate institutional and policy environments for the successful uptake of the new knowledge and technologies being generated at the research level.*⁵⁹

The 2011 SRF laid down a marker in terms of how CGIARs would be involved in scaling; mostly by developing research outcomes and innovations while considering and integrating the needs of scaling partners. Once innovations were ready to scale, “the locus of management and program control would shift to financing and implementation agencies” though researchers could continue to be involved in a supporting role.

The 2011 SRF recognized that scaling would require a massive increase in financing and called for a tripling by 2025. The justification for this included the need for the CGIAR to establish extensive partnerships whose funding it would presumably underwrite in whole or in part: “the mandate of the CGIAR has been expanded to explicitly include the responsibility to engage development partners and support their work needed to reach development outcomes, which implies additional organizational and managerial complexity.”⁶⁰ Unfortunately, this recommendation for financial resources for the actual scaling did not happen, and is one of our recommendations stated in the main body of this paper.

In addition to the lack of dedicated resources for scaling, the 2011 SRF had several other weaknesses. No formal mechanisms for monitoring and evaluation of SLOs were put in place for tracking how research was contributing to achieving SLOs, nor a system of accountability. As a result, a subsequent analysis of the SLOs in 2013 found that: “The SRF was found to **lack connection between the CGIAR Research Programs (CRPs), and the high-level objectives of the system** encompassed in SLOs [system level objectives].”⁶¹ [emphasis added]. The SRF also was criticized as having no impact pathways to connect research outcomes to CRPs, and CRPs to the SLOs, including lacking Intermediate Development Outcomes (IDOs). IDOs were defined as occurring at a scale “corresponding to the CGIAR’s target domains”⁶², i.e., before innovations were to be handed off to partners.

The review of SLOs also noted that CGIAR monitoring and evaluation systems were not collecting important information relevant to scaling or advancing along impact pathways, such as costs and feasibility at scale.⁶³ It highlighted a major challenge in terms of accountability for SLOs and the linkages and pathways from research to IDOs to SLOs: “Availability of credible data at suitable scales is a challenge that the CGIAR will need to address by linking to existing services and Initiatives where possible.”⁶⁴

⁵⁸ *Ibid.* p.38

⁵⁹ *Ibid.* p. 27

⁶⁰ See the CGIAR web statement and documentation on partnerships, <https://www.cgiar.org/how-we-work/strategy/partnerships/>

⁶¹ *Ibid.* p.2

⁶² *Ibid.* p. 5

⁶³ *Ibid.* p. 14

⁶⁴ *Ibid.* p. 26

As the SLOs were closely aligned with the MDGs, this undercut credibility that the CGIAR could be counted on to contribute to these global goals, and that the alignment of SLOs had not necessarily contributed to a real change in the research agenda. Again, referring to the 2013 study CGIAR System-Level Outcomes (SLOs), their impact pathways and inter-linkages:

[While] some CRPs had developed more analytical approaches to priority setting, [...] there was little evidence that [these priorities] influenced resource allocation. [...] Overall, legacy research and bilateral funding played a large role in CRP resource allocation⁶⁵

Finally, the paper explicitly noted, at least in reference to Natural Resource Management, that: "... cases of broad-scale technology adoption resulting in large scale impacts have been very limited."

This report and others concluded that the impact on the system and results of these initial reforms did not meet donors' expectations.⁶⁶ As a result, after 2012 funding once again shifted away from systemwide and programmatic Initiatives back to the Centers, so that the funding of systems institutions became challenging. Overall funding began to decline in nominal terms after 2014 and pressure for a second set of reforms increased.

⁶⁵ Ibid, p. xi-xii

⁶⁶ Some of the reasons include: (i) a sense that there were too many CRPs; (ii) a lack of a systematic process for ensuring common standards of quality and content in CRPs; (iii) research was still not felt to reflect the various new global priorities that had emerged under the MDGs. Ibid. p. 50.