CGIAR 2030 Plan

Review of CGIAR Research Program and Platform Modalities

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Finally, while this report synthesizes and interprets the views of System stakeholders and others, any factual or interpretive errors remain the responsibility of the authors.

Table of Contents

List of Boxes and Tables

List of Acronyms

A4NH	CGIAR Research Program on Agriculture for Nutrition and Health
AR4D	Agricultural Research for Development
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CGIAR	Consultative Group for International Agricultural Research
CIAT	CGIAR International Center for Tropical Agriculture
CIMMYT	CGIAR International Maize and Wheat Improvement Center
CIP	International Potato Center (CGIAR)
CRP	CGIAR Research Program
DDG	Deputy Director General
FISH	CGIAR Research Program on Fish
FP	Flagship project (CRP)
ICRAF	CGIAR World Agroforestry Center
ICT	Information, Communication Technologies
IDRC	International Development Research Council
ISPC	CGIAR Independent Science and Partnership Council
IEA	CGIAR Independent Evaluation Arrangement
IITA	CGIAR International Institute of Tropical Agriculture
IRRI	CGIAR International Rice Research Institute
IFPRI	CGIAR International Food and Policy Research Institute
LIVESTOCK	CGIAR Research Program on Livestock
MARLO	Managing Agricultural Research for Learning and Outcomes
M&E	Monitoring and Evaluation
MEL	Monitoring, Evaluation and Learning
MIS	Management Information System
NARS	National Agricultural Research System
PIM	CGIAR Research Program on Policies, Institutions, and Markets
QMS	Quality Management System
RBM	Results Based Management

RTB	CGIAR Research Program on Roots, Tubers and Bananas
SMO	System Management Office
SRF	Strategy and Results Framework (CGIAR)
ToC	Theory of Change
ToR	Terms of Reference
WHEAT	CGIAR Research Program on Wheat
WLE	CGIAR Research Program on Water, Land and Ecosystems

Executive Summary

1. Introduction

As part of the CGIAR 2030 Plan development process, the System is taking stock of progress and challenges in delivering CGIAR Research Programs (CRPs) and Platforms. To this end, the System Management Office commissioned a light-touch, mixed-method external Review, focusing on what works well and what did not work well with the CRPs and Platforms. This report presents the findings, conclusions, and recommendations of this external Review.

CGIAR research delivery has evolved into a complex architecture since the 2008 reforms that oriented research around large, multi-partner programs. This delivery can be broken down into three domains, each with specific mechanisms or 'modalities'[1] that are detailed in the Request for Proposals for this Review -- namely:

- **Domain 1: Focus** –encompassing the modalities of *priority setting* for CRP portfolios, the research program *design process* and *resource allocation*;
- **Domain 2: Management** –encompassing the linked modalities of *governance* and *management* arrangements for effective CRP delivery; and
- **Domain 3: Delivery** –encompassing the modalities of *partnership* arrangements, *monitoring and reporting*, and the supporting *services* (legal, finance, information technology, human resources).

2. Findings

2.1. Focus: The Review elicited key findings around achievements and challenges to date for identifying program research priorities, designing research and positioning Agricultural Research for Development (AR4D) research programs. In summary, the Review found that:

- There is a widespread consensus across the System on the importance of being explicit about what research is prioritized and how those priorities are set (and resources allocated);
- There is a perceived ongoing tension with donors over who controls the research-focusing agenda, with additional challenges in contexts where donors have their own priorities reflected through their bilateral funding;
- Theory of Change (ToC) and linked research prioritization methodologies have evolved and can be further improved;
- CRPs have helped shift the CGIAR research focus to global and cross-cutting issues (including notably gender research) and thematic areas of common interest (such as crop commonalities);
- The research CRP (Program and Flagship project components) design process – from design to delivery – is widely perceived to be cumbersome – particularly in the design and validation phase -- with scientists also involved in too many CRP processes, and therefore requiring more thought in terms of process and structure; and

[1] For the purposes of this report, 'modalities' refers to the mechanisms that make up and effective cycle of focus, design and delivery of CGIAR research.

- There is a widely shared view across the System of where CRP research adds most value in the AR4D value chain – namely through collective action that links multiple partners and Centers in end-to-end research delivery.

2.2. Management: The Review examined progress to date in the governance and management of CGIAR research programs and platforms. In summary, the Review found that:

- Most CRPs have changed their governance in line with 2014 Fund Council instructions, and have tried to address in different ways the challenges inherent to matrix management related to oversight and inclusion, as well as the risks of 'organizational capture' of CRPs by some Lead Centers;
- There seems to exist a distinct typology of CRPs with funding and institutional characteristics that lend them to different management models;
- In contrast to the CRPs, the three Platforms have more individually-tailored governance and management arrangements with their own internal performance metrics; and
- Comparator research programs are not directly comparable but in notable instances have grant-making, consortium building and reporting modalities that provide useful insight for evolving CGIAR research programs.

2.3. Research delivery: The Review examined achievements and challenges in CRP evolving approaches to partnerships, monitoring, evaluation and learning, and to utilization of shared services. In summary, the Review found that:

- Partnerships are at the heart of the CGIAR mission and approach and have strengthened considerably in the past decade through cross-Center collaboration, combined with a redoubling of attention to impact pathways and scaling;
- An important feature of this strengthening process has been the need to adapt and evolve partnerships around 'new' CGIAR focus areas, including notably: climate change, nutrition and sustainably produced food, gender and youth;
- Specific programs have developed their own conceptualizations of how partnerships work best in their AR4D value chains;
- CGIAR Platforms focus their cross-Center service provision function on 'back end' support but could do more to support delivery;
- The System has made great progress on monitoring and reporting systems, with Results Based Management focused on Performance Indicator Matrices derived from ToC impact pathways, and feeding an outcome-evaluative Monitoring, Evaluation & Learning (MEL) approach. These systems are currently entirely relying on CRPs;
- Experiences from other research consortia and programs outside CGIAR suggest that simpler, lighter and shorter cycle reporting is achievable; and
- There is a widespread consensus that the contribution of shared services (legal, finance, information technology and human resources) will increasingly become essential for sustainable and effective program delivery towards 2030, with capacity differences evident across Centers when looking at services provided by each lead Center to support CRP management.

3. Recommendations

3.1. Strengthening program and platform focus: The Review captured forward-looking insights around strengthening the focus of CRP portfolio design, emphasizing the following recommendations:

- Improve clarity of objective-setting at System level towards a smaller number of priority research areas (cf. the four high-level outcomes identified at the Science Leaders meeting in Montpellier) set via a transparent process, with CRP and Flagship project focus then hierarchically contributing to these high-level objectives;
- Strengthen evidence-based program portfolio priority assessment, bringing in mixed methods and looking beyond attribution to systemic contribution;
- Focus this priority setting more purposefully on AR4D value chains, delivering and scaling for impact and considering multidimensional metrics of change; and
- Secure pooled funding allocations that are sustainable, transparent and predictable to ensure a focus on end-to-end research, with funding delivered through staggered rounds of research programming.

3.2. Strengthening governance and management arrangements: The Review addressed emerging forward-looking insights around strengthening governance and management arrangements for CRPs and Platforms. These insights point to the following recommendations:

- Streamline and strengthen CRP research management as part of a continuing shift to cross-Center programming that presents an alternative to the existing 'Lead Center' model, drawing where appropriate on comparator research consortiums and programs;
- Strengthen CRP adaptive management practices and supporting information systems in a continuing move away from a linear research model; and
- Ensure that Platforms are effectively integrated into System governance, especially in the case of Genebank with its distinct independent status.

3.3. Improving the delivery of research programs: Finally, the Review turned to the forward-looking insights gleaned around improving the delivery of CGIAR research programs, identifying the following recommendations:

- Strengthen intelligent design of partnerships for delivery as a condition of pooled funding, informed by emerging models and backed by allocated time and resources for partnerships;
- Strengthen Platform 'front end' support for delivery around Communities of Practice and draw-down services for political economy/ policy processes, private sector investment and scaling;
- Strengthen adaptive management of program delivery, backed by lighter and 'just in time' outcome-evaluative reporting that builds on the all the work done over the past two years and does not reinvent the wheel; and
- Improve efficiency of Services provision while fostering Center-based pockets of research support services available to all other Centers (e.g. MARLO based at CIAT).

1 Introduction

As part of the CGIAR 2030 Plan development process, the System is taking stock of progress and challenges in delivering CGIAR Research Programs (CRPs) and Platforms. To this end, the System Management Office (SMO) commissioned a light-touch external Review, focusing on what works well and what did not work well with the CRPs and Platforms. The aim was to ensure that the voices and experiences of CRP and Platform Directors, along with Center Deputy Director Generals (DDGs), who form the group of Science Leaders, inform the design of the 2030 Plan. This report presents the findings, conclusions, and recommendations of this external Review.

CGIAR research delivery has evolved into a complex architecture since the 2008 reforms that oriented research around large, multi-partner programs. Research is now delivered by the Centers collectively and collaboratively, aiming at achieving integrated outcomes and impact at a larger scale. This delivery can be broken down into three domains, each with specific mechanisms or 'modalities'[2] that are detailed in the Request for Proposals for this Review --namely:

- **Domain 1: Focus** –encompassing the modalities of *priority setting* for CRP portfolios, the research program *design process* and *resource allocation*;
- **Domain 2: Management** –encompassing the linked modalities of *governance* and *management* arrangements for effective CRP delivery; and
- **Domain 3: Delivery** –encompassing the modalities of *partnership* arrangements, *monitoring and reporting*, and the supporting *services* (legal, finance, information technology, human resources).

With these domains and modalities in mind, the purpose of this Review was to provide:

- Evidence-based analysis of the advantages and disadvantages of the CRP/Platform modalities emphasizing insights and cases of what worked (innovations and good practice) and what didn't in individual CRPs/Platforms. The Review is NOT an evaluation of individual CRPs/Platforms;
- A comparison of CRP modalities with non-CGIAR matrix Agricultural Research for Development (AR4D) programs and modalities for learning about innovations and good practice; and
- A set of recommendations for CGIAR research delivery mechanisms for the 2022-2030 period.

The Review methodology adopted a simple mixed-method approach, drawing on secondary and primary data sources. An initial literature review extracted key findings from recent evaluative material – notably the recent CGIAR Survey and resulting White Paper[3], and the Independent Evaluation Arrangement (IEA) Synthesis of CRP evaluations.[4] These findings were further deepened by a set of individual interviews with CRP Directors and DDGs. A key methodological limitation was that the Review team was not able to conduct interviews with all CRP Directors, with the result that the findings and illustrative insights place greater emphasis on a sub set of CRP experiences. [5]

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[2] For the purposes of this report, 'modalities' refers to the mechanisms that make up and effective cycle of focus, design and delivery of CGIAR research.

[3] CRP-Platform Leaders' Group (2019). "White Paper on CRP/Platform modalities and preparation process", Unpublished paper, CGIAR, January

[4] Birner, R. and D. Byerlee (2016). *Synthesis and Lessons Learned from 15 CRP Evaluations: Summary Report*, CGIAR: Independent Evaluation Arrangement.

[5] The interviews conducted for this Review are listed in Annex I.

This limitation was partly mitigated, however, by the additional group-diagnostic sessions conducted with CRP/Platform Directors/Science Leaders and Center DDGs during the Science Leaders Meeting in Montpellier on 3-6 June 2019. A draft of this Review was circulated for comment amongst the Science Leaders as part of this process before being finalized.

Following this introduction, **Section 2** reviews the three delivery domains (namely: focus, management and delivery) and their modalities, identifying challenges and instances of good or innovative practice across the System compared to other relevant examples outside the CGIAR. Looking forward and mostly drawing on the synthesized views and insights of CRP/Platform Directors and Center DDGs, **Section 3** offers a series of recommendations around the three delivery steps and modalities for improving research focus, management and delivery in the 2022-30 period.

2 Modalities Review

2.1 Research Focus

In this Section, we present the findings of our review of achievements and challenges to date in the modalities adopted across CRPs for identifying program research priorities, designing research and positioning research programs within the AR4D 'value chain'. In addition, we present our findings regarding the role of Platforms in providing cross-Center support, notably through System-level backstopping and facilitating of Communities of Practice. In summary, the Review found that:

- There is a widespread consensus across the System on the importance of being explicit about what research is prioritized and how those priorities are set (and resources allocated);
- There is a perceived ongoing tension with donors over who controls the research-focusing agenda, with additional challenges in contexts where donors have their own priorities reflected through their bilateral funding.
- Theory of Change (ToC) and linked research prioritization methodologies have evolved and can be further improved;
- CRPs have helped shift the CGIAR research focus to global and cross-cutting issues (including notably gender research) and thematic areas of common interest (such as crop commonalities);
- The research CRP (Program and Flagship project components) design process – from design to delivery – is widely perceived to be cumbersome – particularly in the design and validation phase -- with scientists also involved in too many CRP processes, and therefore requiring more thought in terms of process and structure; and
- There is a widely shared view across the System of where CRP research adds most value in the AR4D value chain – namely through collective action that links multiple partners and Centers in end-to-end research delivery.

2.1.1 Identifying program research priorities

Within and across CRPs, research priority setting – meaning the focus of CRPs and their constituent Flagship projects (FPs) – is a key modality, driven by the pursuit of organizational relevance and effectiveness. CRP program prioritization has therefore been characterized by a conscious effort to map research priorities to expected change

along output to outcome (behavior change around knowledge, attitudes, skills and practices) to impact (e.g. increased food security, reduced poverty) pathways. This has been supported by the widespread adoption across CRPs – backed by capacity building – of a Theory of Change (ToC) approach[6] to guide and frame research prioritization. Through a ToC approach, Intermediate Development Outcomes are identified and their hypothesized longer-term contribution to overarching System-Level Outcomes made transparent.[7] A mix of foresight activities and partner discussions has informed ToC development.[8]

CRP Directors and Center DDGs recognize the added value of a ToC approach in framing research prioritization, whilst also pointing to key differences in its application to a research program that does not have the same clear direction of travel as a development intervention in which ToCs are standard fare. Meanwhile, a recent IEA Synthesis Review of CRP evaluations[9] confirmed the significant improvement made by grounding research design and prioritization within a coherent ToC, measuring progress towards strategic goals and testing program assumptions along the way. The IEA Synthesis concluded, however, that a ToC is not a substitute for empirical analysis and valuation of research outcomes/ impacts against these higher-level goals. Research outcomes in other words, still need to be empirically valued as the basis for research prioritization.

With this warning in mind, interviews with CRP Directors revealed innovative attempts to push the empirical grounding in evidence for valuing research outcomes as the basis for research prioritization and accompanying investment. One notable example is the work of the CGIAR Research Program on Roots, Tubers and Bananas (RTB) on Return on Investment analysis (see Box 1). The RTB Director reflected that an important next step is to build in more *ex ante* qualitative case analysis as part of a broader valuation of expected change, including for example metrics that capture gender and social analysis processes expected from any given research focus.

Box 1. Return on Investment research in the CGIAR Research Program on Roots, Tubers and Bananas (RTB)

It is challenging to have a priority setting exercise that can reach across the entire CGIAR because you are comparing apples and oranges (policy, land degradation, impacts of plant disease and so on). This is what some donors have proposed but it's quite problematic. It's far easier to assess priorities when you restrict your scope to research in a common area and more feasible to guide investment within a single CRP. Directly linking priority assessment to resource allocation, may introduce biases from those providing information.

To this end – and as a condition of donors to approve our first phase – we identified the people needed to understand the return on different research investments in RTB crop research. We initiated a systematic, quantitative *ex-ante* priority assessment across all the participating Centers, analyzing best bets against Return on Investment (ROI) including poverty weightings. We looked at the most promising technological innovations –management of banana wilt disease, cassava seed, potato blight etc. – and calculated ROI using partial equilibrium economic surplus models and poverty impact simulations. This process was ground breaking because we did it with multiple crops and in a multi-Center way, involving all four CG Centers with a common framework and standard methodology. A large benefit for all potential research investments is the set of impact indicators (estimated adoption area by region, number of beneficiaries, net present value, internal rate of return, and poverty reduction). Findings from the assessment informed the flagship and cluster set up of RTB. Having the donor mandating this assessment crystallized our thinking and provided an incentive to get it done as a joint exercise. We were clear that the results of quantitative analyses were only one of several inputs for prioritization and that there is no formula for how priority assessment could be translated into

[6] Cf. Thornton, P. K., et al (2017). *Responding to global change: A theory of change approach to making agricultural research for development outcome-based*. In *Agricultural Systems* 152, 145-153, March.

[7] The System-level outcomes can be found in the CGIAR's Strategy and Results Framework (SRF).

[8] The CRP- and Center-supporting Global Futures and Strategic Foresight Program, led by PIM, with its 'drivers of change' landscape scanning methodology, across the entire System. See, for example, https://ispc.cgiar.org/meetings-and-events/foresight-cgiar

[9] Birner, R. and D. Byerlee (2016), op cit.

portfolio decisions on resource allocation. Some of the limitations are that this exercise applied to technological innovations within RTB and it's challenging to address gender in this highly aggregated analysis as so many gender factors are context specific. The next step should be to further develop this instrument beyond a money metric, by bringing mixed methods, with a stronger farmer perspective and integrating gender, social and environmental analysis more effectively.

Source: Graham Thiele, pers. comm.

See also: Pemsl, D. et al, forthcoming. "Strategic investments in international agricultural research: Lessons learned from a global ex ante cross-crop priority assessment", for submission to *Food Policy* journal

Beyond this challenge to provide a clear empirical basis for theorizing change and determining focus, the ever-present risk threatening to undermine CGIAR progress towards coherent research prioritization remains funding uncertainty and the mixed-mode of delivery. With a lower-than-expected proportion of pooled W1/2 funding (less than 20% after a spike during 2021 to 2014) and Centers continuing to chase bilateral funding, the double effect is that: (a) programs in reality become driven by donor country and thematic priorities rather than System-theorized global priorities; and (b) research programs remain too fragmented, with high attendant transaction costs.

CRP Directors and DDGs all recognize this resource challenge. The reality is, however, that with low W1/2 funding levels, individual Centers continue to pursue bilateral funding opportunistically. The extent to which CRPs can develop and maintain strategic and systemic FP research depends fundamentally on funding modalities and predictability (see discussion below). The consensus amongst CRP Directors is that a minimum of, on average 30% pooled funds, with low year-on-year volatility (10% or less) would support sustainable planning and implementation across participating Centers and partners and allow CRPs to "get on with the science" within clearly-theorized, empirically-justified ToCs/ impact pathways.

2.1.2 Thematic scope

The CRP model at its heart adopts a portfolio approach that designs research around more than what one Center can do separately, and more than what the sum of the individual Centers can achieve.[10] Consequently, as the CRPs have evolved, they have nudged participating Centers into new global and cross-cutting thematic spaces. One notable area of progress under the first CRP phase was on the cross-cutting theme of gender. A recent IEA evaluation of gender in CGIAR research[11] found significant progress in gender research across many first-round CRPs and a *"qualitative advance in the integration of gender in the design of the second round of CRPs, compared to the first round, with some emerging, promising impact pathways."* The evaluation included many examples of progressive inclusion of gender integration, concluding that *"the groundwork has been laid for more systematic and effective integration of gender in CGIAR research during the period of the Phase II CRPs."*[12] One CRP Director interviewed for this Review echoed this finding, arguing that CRPs have *"moved the dial"* on gender, bringing a heightened visibility for gender research within CRP program portfolios, backed by the gender platform that sits within the CGIAR Research Program on Policies, Institutions and Markets (PIM). Describing his CRP's work to build a gender lens into breeding programs (see Box 2) he concluded:

[10] See, for example, Statement 3 in the "Joint Statement for the RTB Partner Collaboration", Rome, Cali, Lima, Ibadan, and Montpellier, August 28, 2017.

[11] CGIAR-IEA (2017). *Evaluation of Gender in CGIAR – Volume I, Evaluation of Gender in Research*, Independent Evaluation Arrangement (IEA) of CGIAR, Rome: Italy http://iea.cgiar.org/

[12] Ibid, p.3.

"I would say that this is one area that has been transformational within the CGIAR. And I think that the CRPs and the gender platform have played a large role."

Box 2. Applying a gender lens to breeding programs

The CGIAR Gender Platform, supported by PIM[13], has integrated all the CRPs with a common gender approach, and added value across the portfolio. As RTB, we have paid special attention to gender in a number of technical areas including breeding, linking with the Gender Platform. We benefited from a grant from the Consortium Office to RTB and CIP to reach out to other CRPs and Centers to create a shared space with the Gender and Breeding Initiative (GBI). We began by unpacking how breeding programs actually include gender and what is best practice on product advancement in breeding programs, and then put a gender overlay onto that. Currently, we are teaming up with the Excellence in Breeding Platform (EIB) to transform the way breeding programs integrate gender into decision-making. The EIB platform uses a 'stage gating' approach which moves breeding products systematically through different stages through to varietal release and uptake. We are planning to pilot two tools integrated with the stage gating: the Gender Plus Customer Profile in Breeding and the Gender Plus Product Advancement Tool to ensure that breeding programs are gender intentional.

Source: Graham Thiele and Vivian Polar pers. comm.

2.1.3 The research portfolio design process

The CGIAR developed a clear process for research portfolio design, captured in the Guidance Document published for 2017-22 (CRP2) proposals.[14] The Guidance Document's Strategy and Results Framework (SRF), with the System level and Intermediate Development Outcomes, provides the overall strategic direction for this five-year operational period and sets out the specific requirements and assessment criteria for second phase CRPs. The CGIAR invited the submission of twelve interconnected CRP proposals (comprising eight agri-food CRPs and four global integrating programs) and three platform level proposals (covering genebanks, genetic gains and big data). The Guidance Document further listed the major FP elements for each CRP and approximate W1/W2 weightings for each element. CRP proposals were required to, demonstrate how FP objectives would address SRF Intermediate Development Outcomes and outcome targets, articulate their partnership strategy, and elaborate on their gender research strategy. For each FP, the proposal was required to articulate clusters of activities presenting FP sub-projects. They were also expected to coordinate around site integration for maximum impact. The design process was mapped out with a timeline for the submission of designed proposals using a standardized template and for independent technical review of these proposals by the CGIAR Independent Science and Partnership Council (ISPC), following a clear set of review criteria.

On this research design process, CRP Directors reflected an appreciation for the clarity of guidance around the process, but expressed concerns about the degree of complexity and the cumbersome length of submissions involved. Linked to this point, colleagues also reflected on the risk of mapping pathways onto indicators, and more specifically of losing clarity of outcome-to-impact logic in over-detailed indicator mapping.

At the higher levels of achieving a coherent and impact-focused global contribution (greater than the sum of all programs) and coherent outcome-focused programs (greater than the sum of all CRP FPs), a somewhat disjointed picture has emerged from the research design process to date. Despite extensive up-front attention given to cross-

[13] CGIAR Research Program on Policies, Institutions, and Markets.

[14] CGIAR Consortium (2015). 2017-22 CGIAR Research Program Portfolio (CRP2): Final Guidance for Full Proposals, Montpellier: CGIAR, 19th December.

CRP synergy and cross-CRP collaboration planning, the integration at System level and degree of resulting cross-CRP collaboration was cut back in the face of ongoing W1/W2 funding uncertainties and insufficient incentives put in place at System level. Although there are some good examples of cross-CRP collaboration, for example in the seed studies of RTB and PIM, CRPs work for the most part as separate entities, making it challenging to produce a coherent System-level impact report.

Meanwhile at the CRP level, colleagues reflected that a lack of incentives, allied with insufficient guidance, had led to a shortfall in effort to reach higher-level agreement on what any given CRP was trying to achieve. A current CRP Director, who had been involved in the design of a CRP FP in 2016, reflected that inadequate attention had been paid to higher-level program goals and how FP design would feed into these. Furthermore, implementation had been challenged by the partial funding provided to some FPs within the CRP portfolio. Some FPs had been designed in relative isolation without due consideration to a program outcome rationale and only afterwards more-or-less retrofitted to the SRF:

> *"We should have aimed for program coherence instead of letting the leaders get on with formulating their FPs on their own. Also the donors were not really engaged until later in the process. They came in too late and made some (disruptive) decisions around the structure of the CRP portfolio and the FP funding. I like the idea of early work on collective portfolio and program scoping and design together with the SRG, and getting donors involved in this process early on."*

2.1.4 Program positioning in the AR4D value chain

As noted above, research program focus increasingly has been guided by the purposeful mapping of expected outcomes and impacts using the adopted ToC approach. Notably this has helped CRPs and participating Centers to position their programming in the AR4D value chain, iterating with and linking blue sky research to development delivery. The consensus amongst CRP Directors and Center DDGs was that this middle 'linking' position and role was where CRPs and Centers contributed most effectively in the A4RD value chain. The majority of participants at the Science Leaders Meeting in Montpellier reinforced this. CGIAR is most effective, they argued, when it is positioned in the middle, relying on partnerships for upstream and downstream research delivery in an 'end-to-end' system:

> *"CGIAR's comparative advantage is in the middle, between blue-sky research and development impact. Our role is to conduct translational research that delivers practical solutions and technological innovations together with guidance for how to apply these to the real world for achieving both economic and social value. But the boundaries around our middle playing field are permeable; as for some purposes we need to extend our work a little towards blue sky research and towards development impact where we do things together with partners."*[15]

The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS), for instance, has been cited as one of the first large A4RD programs to be oriented using a ToC approach (see Box 3):

> *"Although robust evidence is currently lacking, a ToC approach appears to have considerable potential to achieve impacts that balance the drive to generate new knowledge in agricultural research with the priorities*

[15] Collaborative Impact and Matter Group (2019). *Science Leaders' Meeting: Discussions and Inputs to the Design of the CGIAR 2030 Strategy Framework*, 3-6 June, System Management Office, Montpellier, pp 20-21.

and urgency of the users and beneficiaries of research results, helping to bridge the gap between knowledge generation and development outcomes."[16]

Box 3. Experience with ToC and prioritization in the CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS)

Towards the end of 2014, an opportunity emerged in CCAFS to refine its research priorities towards a more coherent, theory-driven approach to FP selection. Colleagues came together to develop ToCs for all four thematic areas and for the five regional programs in CCAFS as a first step in crafting the program portfolio. The iterative process for developing the ToCs for all 90 projects in the portfolio took a considerable amount of effort. Initial meetings were held mostly virtually, building on a considerable amount of previous engagement and regional priority setting. The process was completed in five regional face-to- face workshops with key users and stakeholders. The workshops resulted in several outputs: impact pathways for many of the projects, key partners trained in the ToC approach, and a coherent set of outcome targets, as well as workshop documentation and learning notes. It was hoped that these outputs would trigger a change in organizational norms and research practice towards implementing more effective AR4D programs.

One sub-national ToC, for instance, focused on improving weather-based index insurance across several states in India. Service delivery was assumed to improve by providing technical assistance to insurance companies with regards to the indices used by the insurance industry, and by facilitating the interaction between state government and private sector. The objective was to increase the farmers' satisfaction using the crop insurance service. If satisfaction rates would increase, more farmers would start using the insurance products. By using the insurance, farmers would enhance their vulnerability to extreme climate variability and. As with other projects, the ToC for this work was co-developed early in the project cycle in an effort to ensure relevance and buy-in from all key stakeholders. After three seasons of A4RD, more than 1 million farmers in Maharashtra state had been reached with improved insurance products to help them cope with climate risk in their soybean, rice, cotton and pearl millet crops.

Source: Thornton, P. K., et al, 2017, op cit. 148; Bruce Campbell, CCAFS Director, pers. comm.

The research design and quality assurance processes, however, appear to not have consistently taken this middle position in the 'end-to-end' AR4D value chain system. Across the two past CRP phases, the program directors have experienced constraints imposed on their design for an impact-focused end-to-end approach, such as an overriding technical concern with intrinsic research quality. The Director of the CGIAR Research Program on Livestock, for instance, recalled how his CRP (then Livestock and Fish) adopted a value chain approach with a research-into-use focus and saw similar initiatives across the System being frustrated by ISPC concerns with dilution of scientific rigor (see Box 4). He and ILRI colleagues continue trying to mainstream the value chain approach within their own research management framework through an enhanced focus on product lines (instead of open-ended scientific research). For example, they have worked on a product line of dairy hubs to solve knots around economies of scale for smallholder farmers. Similarly, they have branded a product line on index based livestock insurance as a way of improving resilience in pastoral systems:

"This is clearly something that is now branded - we are known for it. It could evolve into a couple of different types of insurance products. But it's something that we can name. Now, let's back up and see where we are on product development? How much of that has been delivered, how much has been piloted? Can we now apply that same type of analysis to our other research activities? It's at the product line level that our ToC really begins to make sense and demonstrate contribution to impact – that's where our scientists really understand what impact it's about. At the FP, CRP or general research level, it all remains quite theoretical and abstract: it doesn't really mean anything. But at the product delivery level, it's becoming more concrete so that we can start describing the 'end-to-end' process. You can start to get concrete about who the

[16] Thornton *et al*, op cit, 145.

partners should be, and where you are situated. For instance, are you still doing proof-of-concept, testing best bets, piloting some actual innovations, or are you at the point that you can sign off for scaling."

Box 4. End-to-end AR4D value chain approach in the CGIAR Research Program on Livestock

In the first CRP phase, we distinguished in our CRP research design process between discovery and delivery. We thought we were being very innovative when we started. We put ourselves out on a limb by saying that we were going to focus our CRP by identifying some selected value chains where we would focus and integrate our research into use, and that there would be delivery aspects all across the agenda (e.g. vaccines). As a CRP, we would focus our work on just a few selected value chains in a just few selected countries and we would commit ourselves to engaging on the policy side and with national partners to develop 'best bets' and work towards an integrated transformative intervention.

While we developed this approach as a key component of our initial proposal, it then became pretty much standard for everyone to include a scaling FP in their second phase. It wasn't that we were pioneering the approach – everyone was coming to the same conclusion that more attention needed to be paid downstream to delivery to achieve impact and meet donor expectations. But during the review process of the second CRP phase, there was a strong System-level resistance to this, with the dominant technical review criteria prioritizing scientific research quality. Driven by the ISPC's concern with FPs compromising the CGIAR's science agenda by moving 'too far downstream' towards development, initial proposals for scaling FPs had to be toned down and forced into hiding in the CRP. In the face of legitimate donor expectations of development delivery, the ISPC saw themselves as the 'guardians of the science', ensuring that we didn't dilute our science comparative advantage and look like we were 'slipping down' into development work.

Source: Tom Randolph, Livestock Director, pers. comm.

2.1.5 Platform focus

The CGIAR's Platforms provide cross-Center support and learning services and do not compete for research funding with CRPs.[17] The three Platforms' focus on service support can be characterized as the collection and expert maintenance of resources common to the system. This role extends from improving data findability, accessibility and interoperability[18] in the case of the Big Data Platform, or improving the management of genetic resources in the case of the Genebank Platform.

Alongside this role, the Platforms host Communities of Practice that share and reflect on good practice. The Excellence in Breeding Platform, for instance, combines a Community of Practice function with a more directive role in implementing funders' modernization initiative for breeding (Crops to End Hunger). The Genebank Platform is more directive in establishing common standards, disbursing funds and reviewing performance while also maintaining to some extent a Community of Practice. The Genebank Platform supports 'science in conservation' amongst Center genebank collections. Through its focus on cost efficiency, standards, quality management, taxonomy and so on, this Platform supports the science-related work that is one step removed from the research practice of the CGIAR but ensures a well-managed and cost-efficient collection remains available within and outside the CGIAR System. It enables the System to fulfill its Global Public Good mandate to preserve the world's genetic resources for humanity.

[17] Initially the Big Data Platform attracted misunderstanding –now abating– in its fledgling existence in instances where Centers and CRPs perceived it to be competing for research funding opportunities.

[18] See CGIAR Platform for Big Data in Agriculture and Accenture (2017). *Accelerating CGIAR's Digital Transformation: A high level assessment of digital strategy across CGIAR*, March.

2.2 Governance and Management

In this Section, we review achievements and challenges to date in the modalities adopted for the governance and management of CGIAR research programs and platforms. The CGIAR has evolved from a Center-focused network to a programmatic System with a fairly complex matrix governance and management structure that, as the CGIAR System Organization Executive Director put it at the Science Leaders Meeting in Montpellier, aims to *"achieve something that is bigger than the sum of the individual Centers and is able to sustain funding."* In summary, the Review found that:

- Most CRPs have changed their governance in line with 2014 Fund Council instructions, and have tried to address in different ways[19] the challenges inherent to matrix management related to oversight and inclusion, as well as the risks of 'organizational capture' of CRPs by some Lead Centers;
- There seems to exist a distinct typology of CRPs with funding and institutional characteristics that lend them to different management models;
- In contrast to the CRPs, the three Platforms have more individually-tailored governance and management arrangements with their own internal performance metrics; and
- Comparator research programs are not directly comparable but in notable instances have grant-making, consortium building and reporting modalities that provide useful insight for evolving CGIAR research programs.

2.2.1 Overview

The CRP governance structure signed off by the Fund Council in 2014 required that all CRPs shifted to a uniform governance body with the following oversight, advisory and reporting arrangements:[20]

- The CRP Independent Steering Committee is the central advisory body that also manages the performance of the CRP Director and recommends for approval the work plan and budget. Ultimate fiduciary responsibility for implementation rests with the Lead Center Board of Trustees.
- On an administrative basis the CRP Director reports to the Lead Center Director General (DG); and
- The DGs of the Centers involved in the CRP act in some instances as ex-officio members of the Independent Steering Committee, but Centers cannot constitute a majority on that Committee.

The IEA synthesis of CRP evaluations[21] found that most CRPs had indeed changed their governance structures but that this had resulted in a *"mixed picture"* as to whether this had met the *"governance challenges inherent to the matrix management structure of the CRPs."* Emerging challenges included a question mark over the ability of the governing bodies to exercise a real oversight function (instead of merely an advisory function) and the linked risk of 'organizational capture' by the Lead Center – i.e. capturing of a disproportionately high level of benefits of the CRP by the Lead Center[22] – with fiduciary and operational responsibility for the program. It is important to note here that not all CRPs are in the same situation regarding this risk. Governing bodies experienced difficulty in balancing the

[19] This is exemplified in a recent review of governance and management conducted by the CGIAR SMO.

[20] CGIAR (2017). "Taking stock of CRP and Platform governance arrangements", Presentation 4th December 2017. Accessed at https://www.cgiar.org/wp/wp-content/uploads/2018/03/SMB8-03A-Rev1_TakingStock_CRP-governance.pdf

[21] Birner and Byerlee (2016), op cit, 11.

[22] We note that there may be different explanations for this result that are not necessarily the result of a high level decision of a Lead Center.

demands of remaining small enough to be effective (i.e. managing on a day to day basis without too many voices in the room) and large enough to be inclusive of the range of partners involved.

Furthermore, the balance between governance of the System and management of CRPs has been critiqued in the White Paper survey responses as well as in interviews conducted for this Review. The overall sense is that the balance is tilted towards System governance at the expense of multi-institutional CRP management challenges. One CRP Director explained the imbalance in this way:

> *"It's very hard to govern multi institutional partnerships – you really have to do it through* management. *We are completely over-governed in CGIAR".*

CRPs with different management arrangements (e.g. balance of funds between pooled and Center-based funding streams) have shown different advantages and disadvantages with regards to matrix management. The programs are distinguished principally by the funding sources (specifically the balance of funds between pooled and Center-based funding streams), the thematic focus, and the number of Centers and external partners involved in the research design and delivery. The analysis by some of the CRP Directors for this Review points to a working typology – the best possible given the time and resource limitations on this Review – **constituting three main types of program management arrangement** that are influenced by funding sources, thematic focus and institutional partnerships:

- the large integrating CRPs;
- the smaller integrating CRPs; and
- the agri-food CRPs focused on specific commodities.

The agri-food CRPs generally have a strong overlap between Lead Center and research interest, a relatively simple management model, low transaction costs and a relatively easy uptake of CRP innovations into Centers. We therefore focus below on the challenges associated with the integrating CRPs that are more complex in terms of scale and partnerships. Integrating programs are thematically driven CRPs whose portfolio of thematic areas integrate rather than reproduce the core research foci of participating Centers.

2.2.2 Large Integrating CRPs

Large integrating CRPs involve a large number of institutions (Centers and external partners) and appear to work effectively with collective management arrangements and a light Center management footprint. CCAFS and PIM, for instance, manage their multi-institutional research programs with a management committee overseeing the work of the FP research managers who are responsible for clusters of research activities that are not tied exclusively to any one participating Center; instead each Center is aligned with how their research program is organized. This alignment enables the FP research managers to manage a network of researchers in different institutions (partner Centers and external partners). The management committee makes decisions about what research gets funded through the FPs and what institutions (Centers and external partners) need to be involved.

The contracting arrangements in this management model involve partners contracted on a project-to-project basis. Research partners are essentially subcontractors who access the pooled funds through a research project contract, deliver research products and then are assessed against key performance criteria. A key factor in the success of this model is that the CRP is able to secure and sustain a reasonably high proportion, and overall level, of pooled

(W1/W2) funds. CCAFS, for instance, has secured 30% of pooled funds. While still on the low side, this enables and sustains project-to-project contractual relationships with research networks across institutions.

2.2.3 Smaller Integrating CRPs

Smaller integrating CRPs work across a smaller but nonetheless significant number of institutions (Centers and external partners) with a more complicated 'institutional management' arrangement that is designed to leverage the capabilities – people, partnerships and resources (grants) – of Centers and external partners. The limited size of the pooled funding resource envelope in large part is the logic driving this model.

In the case of the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH), for instance, the CRP commands only 20% of CGIAR pooled funds in its total budget and decided that without at least 40% pooled funds and a relatively low absolute level of pooled funding (arguably as important as the percentage of pooled funds) they would be unable to organize a large, multi-institutional program comparable to CCAFS or PIM. Hence, leveraging additional resources from the participating Centers and strategic partners became essential. The A4NH Director explained that in order to incentivize the participating Centers and partners, they needed to be given a bigger say and core management role. Individual FPs were then developed under the research program and a lead institution identified for each Flagship as a 'managing partner'. This management model recognizes that:

> *"It's really relying on resources from those (partner) institutions. And then their incentives are to get access to this (pooled) funding that allows them to fill gaps (in their Center budgets) and develop new (research) areas and ... promote themselves (as a Center)"*

In contrast to the management model of the larger integrating CRPs, with their project-to-project transactional contracting model, this partnership model draws on institution-to-institution contracting model involving of a relatively small number of managing partners who are committed to building a multi-institutional program and who then sit on the CRP Management Board.[23] These managing partners are either CGIAR Centers or, if needed for research expertise, institutions from outside the CGIAR system. In the latter instance, A4NH brought in Wageningen University (food systems) and the London School of Hygiene and Tropical Medicine (public health) as managing partners and Board members. The A4NH Director summarized the program model as follows:

> *"We assemble all the projects of a managing partner into the contract and say, 'for this year, this is the money you're getting from A4NH. These are all the kinds of terms and conditions and here's what we're expecting in terms of deliverables.' And then annually we'll have a performance discussion with each of those Managing Partners where we go through what they reported in terms of deliverables. We'll talk about any challenges they have with resources or in playing their managing role or in coordinating their Center. So, we kind of have a formal annual review of each managing partner which is linked to the contracts we have with them."*

Crucially, the signing of an institutional contract signals a three-year funding commitment from the CRP Director to the managing partners, which is then subject to joint review and 'mid-course' correction ahead of the second three year period (although one year was subsequently knocked off in the case of A4NH). This matrix program model manages the institutional contract through a reporting Management Information System (MIS) that allows planning

[23] For more detail on A4NH CRP Governance and Management see: https://a4nh.cgiar.org/files/2018/06/A4NH_-GovNMagmtHandbook_FINAL2_Feb23_2018.pdf

and reporting to be fed into the CGIAR System. These managing partners in turn manage their research projects and coordinate in-country. In addition to having this small number of managing partners with institutional contracts, A4NH also manages project contracts with 'strategic partners' who deliver research outputs without getting involved in steering the program in the way that management partners do.

2.2.4 Platform governance and management

Platforms were created to develop new, integrated organizational capabilities. Therefore, in contrast to the CRPs, the three CGIAR Platforms have more individually tailored governance and management arrangements with their own internal performance metrics. The Coordinator of the Genebank Platform, managed by the Global Crop Diversity Trust (the Crop Trust), for example, describes "an excellent platform system that is working well (towards clear management targets)" and which ensures accountability:

> *"Crop Trust positions itself as coordinator not leader. We have a great management team – five individuals from different Centers and the Crop Trust. Diverse views are voiced but the Centers can rely on the Crop Trust to maintain oversight across the system and help ensure that funding is allocated strategically. So, we have a very nice partnership."*

Each Platform's relationship with the overall System governance structure reflects its distinct overall positioning and function within the System. In the case of the Genebank Platform there remains a lack of information and involvement of the Lead Center because it is not a CGIAR Center and therefore not privy to the communications provided to the DGs or to communications related to the SMB, SC and General Assembly. The Genebank Platform Coordinator describes a good working relationship with the System but also points to its high transaction costs at times (see Box 5).

Box 5. The Genebank Platform's relationship with overall System Governance

The Genebank Platform, managed by the Global Crop Diversity Trust, provides a Global Public Good, mandated to the CGIAR and essential to sustaining and delivering the raw resources for crop improvement. Crop Trust doesn't just work for the CGIAR; it works for genebanks worldwide. We've currently raised from governments US $300m in endowment funding, the income from which mainly goes to CGIAR gene banks. We're increasingly turning to the private sector for funding.

The Global Public Good function of the CGIAR requires a different mode of management and monitoring compared with much of the rest of the System, which is focused on donor-funded research-to-development deliverables. The System has accommodated the differences of the Genebank Platform, including the unique performance targets, and agreed to ring-fence funding for the essential operations of the Platform. But it appears difficult at times to make people in the System understand this, and support is needed for this at the highest level in CGIAR. The recognition of the critical service role of the genebanks, germplasm health units, policy support, etc. is insufficiently formalized to secure ongoing support and understanding of the relevance of the Genebank Platform in the event of a change of management at the SMO or a CGIAR restructuring. Also, the Crop Trust is not formally recognized as a donor with a long-term commitment to the CGIAR and a seat in a decision-making body.

Source: Charlotte Lusty, Genebank Platform Coordinator, pers. comm.

2.2.5 Comparator research programs

This Review incorporated a scan of comparator research programs based almost exclusively on a web-based search. A summary descriptive analysis of these comparator programs is presented in Annex II. A more in-depth comparative analysis based on detailed analysis of funding streams, collaborative requirements, and governance and management arrangements was beyond the scope of this Review. Furthermore, when reviewing the governance and management modalities of the CGIAR research programs, there is a widespread consensus that the institutional set

up of the organization – with its cross-cutting research programs that link with Center-based bilaterally funded research – makes it very difficult to identify useful comparator organizations. Indeed, the insights gleaned from comparator research consortia and programs – for the most part conventional grant making programs that disburse funds through a lead grant-holding organization – throw into relief the somewhat unique transparency challenge faced by CGIAR as a complex mix of pooled and bilateral funding flowing through a mix of CRPs and Center-specific management arrangements.

The USAID-funded **Feed the Future Innovation Labs** program (formerly known as Collaborative Research Support Programs, CRSPs), while far more streamlined, works under a similar grant making programmatic governance structure, funding 'management entities' (selected from lead US Universities) either through a consortium or 'sub-award' model (see Box 6). The program *"draws on the expertise of top US Universities and developing country research institutions to tackle some of the world's greatest challenges in agriculture and food security."* Led by US Universities, these Innovation Labs are described by a USAID key informant as *"central to advancing novel solutions that support our goals to reduce global hunger, poverty and under-nutrition."* Feed The Future Innovation Labs are centrally funded and expected to achieve and produce regional and global impacts, although a USAID bilateral or regional mission can buy into an Innovation lab for country-specific work, if they see that it is relevant for their country.

Box 6. Governance arrangements for the USAID Feed the Future Innovation Labs

With a current portfolio of 24, the Feed the Future Innovation Labs are led by US University 'Management Entities' and involve partnerships with developing country research institutions, based on 5-year awards that can be extended up to 10 years. There are two models of research program. The first, a **consortium model**, involves submission of a pre-identified research program with pre-identified partners and principal investigators. Examples of this model include the soybean and post-harvest losses Innovation Labs. The other type is the **sub-award model** that provides an award to a managing institution that enables 'quick start' activities followed by competitive sub-award research activities. Examples of this model include the Nutrition and the Food Safety Innovation labs.

A US University must first meet several USAID technical and institutional requirements. Once successful, this University is awarded as the management entity for predetermined support. Only after the award is granted do discussions take place around identifying sub-awards research needs and priorities in consultation with USAID, which can be extended to institutions from anywhere in the world. The sub-awardees provide reporting, data management to the Lead University based on agreements between the Lead University and sub-awardees. Each Management Entity is responsible for their Lab's leadership, management, and cooperative agreement administration and for conducting the research.

The Management Entity manages and organizes partners, components and activities of the Innovation Lab. They are responsible for developing annual work plans, monitoring and reporting and for spending performance. A performance evaluation is done for limited selected number of Innovation Labs and not mandated for all of them. It is usually conducted in year 4 and does not look at the quality of the research itself rather looks at how the management entity performed in managing a successful rigorous research program and met milestones. Most Innovation Labs have external advisory boards that draw on individuals from academia, industry and from CGIAR Centers. While the primary job of these boards is to advise and help shape the program, they may also help to broker relationships with the host country institutions. USAID does not mandate the ToRs for these advisory committees, but they tend to be more or less the same.

The Innovation Lab program organizes two annual meetings. The first (summer) meeting brings all grantees together to share ideas and learn from each other, usually outside of the US and most recently in Ethiopia on the theme of resilience. The second (autumn) meeting in DC communicates thematically focused research findings to external stakeholders, including Congress.

More info https://www.feedthefuture.gov/feed-the-future-innovation-labs/

Source: USAID Feed the Future key informant

2.3 Research Delivery

In this Section, we review achievements and challenges to date in the modalities adopted across CRPs for research delivery. We review CRP approaches to partnerships for delivery and the role of Platforms in supporting research delivery. We then consider the progress made in monitoring, evaluation and learning as well as reporting CRP and FP results, and finally review the role of services provided by Lead Centers or the System in supporting effective research delivery. This Review found that:

- Partnerships are at the heart of the CGIAR mission and approach and have strengthened considerably in the past decade through cross-Center collaboration combined with a redoubling of attention to impact pathways and scaling;
- An important feature of this strengthening process has been the need to adapt and evolve partnerships around 'new' CGIAR focus areas, including notably: climate change, nutrition and sustainably produced food, gender and youth;
- Specific programs have developed their own conceptualizations of how partnerships work best in their AR4D value chains;
- CGIAR Platforms focus their cross-Center service provision function on 'back end' support but could do more to support delivery;
- The System has made great progress on monitoring and reporting systems, with Results Based Management focused on Performance Indicator Matrices derived from ToC impact pathways, and feeding an outcome-evaluative Monitoring, Evaluation & Learning (MEL) approach. These systems are currently entirely relying on CRPs;
- Experiences from other research consortia and programs outside CGIAR suggest that simpler, lighter and shorter cycle reporting is achievable; and
- There is a widespread consensus that the contribution of shared services (legal, finance, information technology and human resources) will increasingly become essential for sustainable and effective program delivery towards 2030, with capacity differences evident across Centers when looking at services provided by each lead Center to support CRP management.

2.3.1 Partnerships for delivery

Partnerships are at the heart of the CGIAR mission and approach and have strengthened considerably in the past decade. The focus adopted under the 2008+ reform process has been flagged as a *"major milestone"* in the System's evolving approach to partnerships as noted by a recent IEA Partnership Evaluation:

> *"(The reform) has steered the System and its Centers towards greater collaboration and coordination in CRPs, bringing Centers together to design and implement the programs, and it has stimulated greater attention to the strategic role of partnerships along the impact pathways."*[24]

This focus on cross-Center collaboration, combined with a redoubling of attention to impact pathways, has emerged clearly during this Review. In particular, the role of CGIAR Centers as 'boundary partners' and enablers of end-to-end

[24] McLeod, A. et al (2017). *Evaluation of Partnerships in CGIAR*, CGIAR: Independent Evaluation Arrangement, viii.

research program partnerships has been emphasized. In a research matrix mapping exercise at the Science Leaders Meeting in Montpellier, one participant summarized the challenge as follows:

> *"Blue-sky research will happen, development delivery will happen, our challenge is to translate back into upstream research organizations and translate downstream into development delivery (with the same resources and being evaluated in both extremes also)."*

An important feature of this strengthening process has been the need to adapt and evolve partnerships around 'new' CGIAR focus areas, including notably: climate change, nutrition and sustainably produced food, gender and youth, reducing pressure on the resource base, and evidence-based policy analysis. Individual CRPs have responded innovatively to this challenge. A4NH, for instance, has looked outside the CGIAR system for integrating theme expertise, involving Wageningen University and LSHTM as 'managing partners' (see discussion under 'Smaller integrating CRPs' above).

In addition, there has been an increasing level of attention to private-sector partnerships that facilitate technology delivery at scale. The recent Partnership Evaluation noted that several Center strategies explicitly mentioned the private sector as an important delivery partner, with the Africa Rice strategy stating, for example, *"mobilizing co-investments and linking with development partners and the private sector to stimulate uptake of rice knowledge and technologies"*.[25] The Evaluation picked out three illustrative cases of long-term private sector collaboration:

- The partnership between the World Agroforestry Center (ICRAF) and Unilever in the Novella partnership started in 2002. The partnership aims to establish a sustainable and scalable supply of oil produced by the Allanblackia tree;
- The "Seeds of Discovery" partnership was established in 2011 for characterizing the vast genetic diversity in the wheat and maize collections of the International Maize and Wheat Improvement Center (CIMMYT) and making information available as international public goods, with private sector partners including biotechnology companies and small and medium seed companies; and
- The partnership "Stress-Tolerant Rice for Africa and South Asia" (STRASA) which aims to develop and deliver rice varieties tolerant of abiotic stresses to farmers in less favorable environments. This includes private sector partners in each country, such as private seed companies in India.

Specific programs have developed their own conceptualization of how partnerships work in their A4RD value chains. CCAFS, for instance, adopted a *"three thirds"* principle in their engagement effort that includes one-third of upstream engagement and two-thirds of downstream effort. This translates into *"a third working with next-users to build relationships and define their needs from research, a third on the research itself, and a third on enhancing next-users' capacity to improve the uptake of research outputs."*[26]

This final third of partner capacity building was widely confirmed during this Review as a central intrinsic (capacity for its own sake) and instrumental (capacity for better delivery) plank of the CGIAR mission, not to be lost through reorganization of locations and priorities. At the Science Leaders Meeting in Montpellier, CRP Directors and Center

[25] Ibid, p.19

[26] Thornton *et al*, op cit, 151

DDGs alike emphasized the continuing Center role, grounded in in-country presence and connectivity, for building capacity amongst country research partners primarily through on-the-job capacity building.

With a redoubling of emphasis on delivery, the role of innovative and emergent partnerships has been more clearly articulated. Yet a consensus or shared strategy on how to pursue these new partnerships is still lacking, in particular for the national research partners (such as the NARS) and the private sector actors that can harness a delivery force to take CGIAR products to market and to scale.[27]

2.3.2 Platform support for delivery

The three CGIAR Platforms play a service provision function across the System, delivering information and materials, managing quality and standards and providing a forum for cross-Center sharing of insights and good practice. The Genebank Platform, for instance, delivers 'quality in conservation' service to CG Centers. It does this by developing across the System a gene bank quality management system (QMS), agreed performance standards and a technical and financial review system, and by working with each individual genebank to tailor its work plans to reach these standards (see Box 7). Its Coordinator sees the influence of QMS working throughout the Genebank Teams – significantly the SMO has now introduced performance standards for all of the CRPs – and sees performance management as a valuable generic role for future Platforms across the System. Like the other Platforms in the System, the Genebank Platform also hosts several Communities of Practice, bringing previously isolated technicians and scientists together from around the world to share their expertise around issues such as data management, plant health, seed longevity, cryopreservation –with colleagues continuing with adopting each other's approaches to improve cost efficiency and raise standards.

Box 7. The Genebank Platform delivery of performance standards across the System

The Genebank Platform sets clear performance standards for all CGIAR's genebanks based on the percentage of 'accessions' in its meta gene bank that are available to be immediately distributed as well as other parameters. The International Rice Research Institute (IRRI) is the only Center gene bank working at this level. They demonstrated a capacity to sustain this level with a fixed budget, so were able to confidently set up a long-term partnership agreement with the Genebank Platform, and secure an annual commitment of US $1.4m in perpetuity. This agreement requires IRRI to come up with matching funding by promoting the use of their collection. In this way, the agreement allows the Platform to steer its support for Center collections into the research portfolio of the CGIAR and brings us in line with the developmental goals of the System. There are presently five other Center gene banks that are about to reach the same targets in the next 2-3 years. The Genebank Platform received a very strong response from the Centers aiming for this long-term partnership agreement. The Crop Trust will continue to manage these long-term agreements, and therefore remain strongly tied to the CGIAR System for the longer term.

Source: Charlotte Lusty, Genebank Platform Coordinator, pers. comm.

The focus of much of this Platform support is presently on the 'back end' of improving research performance and standards. Interviewees within the System observed that there was an opportunity for Platforms to play more of a 'front end' role in supporting research delivery through as part of an end-to-end process that impacts and achieves scale. A key component of this is the function of hosting and facilitating sharing around delivery modalities, including good practice in partnership building and policy. Understanding policy enabling environments and the role of private sector partnerships in taking initiatives to investment and taking to market at scale were seen as key aspects of this

[27] McLeod et al, 2017, op cit, viii.

potential front end role. The innovative approach to country level ToC development in the CGIAR Research Program on Fish (FISH) provides a roadmap to how this type of delivery-support Platform role might evolve as part of a CGIAR country collaboration mechanism with specific sectoral assessments building from those (See Box 8).

Box 8. The CGIAR Research Program on Fish (FISH) focus on Country-level ToC

We focus on a limited number of countries and rely heavily on bilateral projects within those countries. There is a strong focus on policy level outcomes, and we are investing in policy research to that end as part of our impact pathway ToC, relying on bilateral funding to support this. We've adopted country-level ToCs to think through and prioritize steps towards our System Level Outcomes. We identify political economy dynamics -- institutions and stakeholders -- and identify priorities where we can contribute to System Level Outcomes. We start with the outcomes and work back through the policy environment context, private sector engagement and so on, in order to think strategically about how to prioritize and shift intermediate outcomes towards development outcomes.

Source: Mike Phillips, FISH Director, pers. comm.

Similarly, work advanced in the past two years under RTB has focused on assessing readiness for taking innovations to scale (see Box 9). This tool enables programs to map a pathway to scale and then score progress as the basis for improving program scaling performance, supporting innovation portfolio management and providing evidence of contribution to boosting external investment in CGIAR and its Centers.

Box 9. Scaling Readiness: Using science to enhance impactful scaling of CGIAR innovation

A key feature of CGIAR Research Program on Roots, Tubers and Bananas (RTB) and other participating CRPs in the second CRP Phase is its advancing work on "Scaling of Innovation" under the leadership of Wageningen University, CIP and IITA. For the past 2.5 years we have invested in developing Scaling Readiness. Scaling Readiness is a project management and innovation management system that supports evidence-based investment decisions in scaling of innovations at project, Center and CGIAR level. Scaling Readiness looks at CGIAR innovations as packages of technologies, new policies, market mechanisms, partnerships, etc. and assesses their readiness for scaling along a 9-level ladder based on a similar framework used by NASA and the EU. The readiness assessment reveals which of the elements in the innovation package form the critical bottleneck for scaling (e.g. access to finance, absence of a regulatory framework, seed systems, etc.). This enables the design of context-specific scaling strategies to overcome bottlenecks and supports scaling partner selection (with whom we need to work together).

Scaling Readiness has three objectives:

1. To enhance the scaling performance of CGIAR research and delivery projects by supporting the design, implementation and monitoring of cost-efficient and realistic scaling strategies;

2. To support innovation portfolio management by providing a dashboard for monitoring the scaling readiness of - for example - all CGIAR innovations. This could support decision-making in: (1) making investment decisions (what are our "rising star innovations"? Which innovations are not moving and do not justify further investments, etc.); and (2) monitoring and evaluation to show donor return on investment (e.g. CGIAR innovations have moved from readiness level 4 to 6).

3. To support fund raising for CGIAR and its Centers, as Scaling Readiness provides evidence of which innovations have been proven to work for achieving certain livelihood outcomes (SDGs) in specific locations. It facilitates approaching donors with a set of ready innovations 'that respond to their key priorities.

We have developed a draft Scaling Readiness Quick Guide and are currently finalizing the Implementation Manual and web-platform where we will avail the materials. The approach is being used by multiple projects inside and beyond RTB to develop and implement their scaling strategies (e.g. http://www.rtb.cgiar.org/blog/2017/12/13/taking-agricultural-innovations-scale-rtb-scaling-fund-awards-first-grants/) and we are in the process of systematically documenting the outcomes.

The German government (BMZ) has been supportive by funding 8 Scaling Experts placed in different CRPs (e.g. their Lead Centers).

Source: Marc Schut, Senior Innovation and Scaling Scientist, International Institute of Tropical Agriculture (IITA) and Wageningen University and Research; Graham Thiele, RTB Director

2.3.3 Monitoring, Evaluation, Learning and Reporting

CGIAR stakeholders and CRP directors acknowledge the big achievement made in the quality of planning and reporting mechanisms. The Executive Director of the CGIAR SMO mentioned in the Science Leaders Meeting in Montpellier that *"Notably the quality of reporting has improved markedly over the years. Annual reporting and shared planning. We don't want to lose that."*

The CGIAR's enhanced commitment to performance-based reporting is captured in its SRF approach to Results-Based Management (RBM). The evolution of RBM approaches in CGIAR and the "learning journeys" taken by each CRP and their lead Centers to adopt RBM, has been carefully document by a recent IEA RBM evaluation:

> *"The evaluation found that within CRPs, and some Centers, there has been a positive dynamic of trying to better understand and embrace RBM, making it work for enhanced effectiveness of agricultural research. Some Centers have made significant investment in RBM and have provided strong leadership and support for RBM within CRPs. A nascent culture shift has taken place towards performance management. Without*

suggesting that Centers have invested all the necessary capacity, and are fully implementing RBM, a key finding was that Centers are not blocking the full embrace of RBM by CGIAR."[28]

Significantly, the RBM instructions set out in the CRP 2 proposal guidance document focused on a Performance Indicator Matrix, derived from a ToC impact pathway, and feeding an outcome-evaluative MEL approach.[29] The ToC methodology discussed above was designed to strengthen adaptive management approaches in research program delivery, moving managers away from a linear to a more reflective and adaptive approach based on 'evaluative practice'. This has been successfully backed up by M&E systems that provide the type of improved rapid feedback loops of information required for this type of learning and adaptation, particularly around the output-to-outcome pathways.

This improvement has in the best cases grounded the new ToC approach into Monitoring, Evaluation and Learning (MEL) systems that track and evaluate progress indicators -- with a shift from simple attribution to more complex, system-based contribution analysis -- along the results chain as the basis for adaptive management. This has been illustrated by the adoption of MEL systems to track the ToC results chain in the CCAFs program, supported by online reporting ICT (see Box 10).

Box 10. The CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) links programmatic ToC with a comprehensive MEL system

A monitoring, evaluation, learning and impact assessment strategy was developed to support the new approach in a comprehensive manner. This strategy was developed to help promote an "evaluative culture" within the program. It includes a conceptual framework, guided by overall program principles for partnership, engagement and communications in a modular way, so that demands can be met for any program as a whole, for its projects, and the wider research system within which CCAFS is embedded.

With appropriate ToCs in place, indicators and baselines are needed so that the underlying assumptions can be continually tested and projects' contributions checked for alignment and plausibility. In its first three years, CCAFS undertook a set of baseline studies at key sites in all five regions, so that behavior and practice changes of farmers and other decision-makers could be evaluated over time.

Self-reflection is essential for adaptive management to be successful in enabling the flexibility and corrective action needed for effective implementation. Change often is not predictable and often happens as not anticipated. Appropriate mechanisms are critical for timely adjusting the course based on well-documented insights and justified arguments that are evidence-based.

A key component is an ICT-supported program and project management processes in the creation of an online platform for project teams to plan their activities, report on them, and monitor progress against outcome target indicators. This platform is accompanied by a "support pack" that provides practical guidance and tools for quantitative and qualitative monitoring.

Source: Thornton *et al*, 2017, op cit, 150; Bruce Campbell, CCAFS Director, pers. comm.

Lessons can be learned from other research consortia and programs elsewhere (outside the CGIAR) when it comes to the effective communication of results to clients and a wider range of stakeholders. Despite the reporting improvements achieved by some CRPs within the CGIAR, donors place a high premium on seeing transparency in how their investments in the CGIAR are used, what research is funded and what results are achieved. A key informant involved with USAID's Feed the Future Innovation Labs, who is also very familiar with the CGIAR system

[28] CGIAR-IEA (2017). *Evaluation of Results-Based Management in CGIAR, Summary Report,* Rome: Italy, Independent Evaluation Arrangement (IEA) of CGIAR, p.3.

[29] CGIAR Consortium (2015), op cit, pp 26-27

and CRPs, contrasts the clear lines of activity and reporting in the Innovation Lab model with the reporting challenges thrown up by the more opaque model of delivery under CGIAR CRPs:

> *"With the Innovation Labs, USAID funds them under a cooperative agreement, with defined reporting requirements and due dates. USAID contributes with other donors to the CGIAR multi-donor funds grant. The CGIAR provide a different platform for USAID and other donors to fund research that is of global impact and in some cases has a long-term vision; very critical work to be done. However, it is challenging to report back on these funds in our mandatory reporting system, as the funds are pooled together from all donors. The CGIAR has been working on strengthening their M&E system, consulted with various donors, including USAID, and had USAID staff on the donor working group to help shape their M&E system. We are still waiting to see the implementation of that system, with 'real time' data gathering and a more flexible global reporting platform that will hopefully be more accurate than the current system and enable donors to track their funds and tell a better impact story regarding how their funds help advance global agriculture research agendas."*

He further pointed out that the Innovation Labs are excellent both at providing frequent reporting and at communicating results to their donors. They also invest in additional communication work, producing blogs, hosting webinars and so on:

> *"Innovation Labs are always telling the donors, stakeholders and US Congress what they are doing with their funds. (In contrast) it is hard to get information from the CGIAR system. The nature of the award with the Innovation Labs warrants "substantial involvement" from USAID staff, and we are closely collaborating with the management entity to get regular monthly and/or biweekly updates. If I request for more regular updates from the CGIAR, with a few exceptions, I may get one update and then hear nothing for a year. We as technical staff and relationship managers need to stay up to date on CGIAR work to communicate it and be able to explain funding requests. They need to get better at communicating their work because they are doing very important research."*

2.3.4 Shared services

There is a widespread consensus that the contribution of shared services (legal, finance, information technology and human resources) will increasingly be a key component of a sustainable and fit-for-purpose program delivery towards 2030. Within the System, there are Centers that are well resourced and thus have systems and services that work well to support the management and delivery of research programs. Smaller Centers were more likely to struggle to feed the constant demand for reporting, oversight and the application of research ethics. Most colleagues agreed that as a result what was needed was to leverage the capabilities of the strong Centers when allocating CRP management responsibilities.

There was also widespread agreement that CRPs should not try to reproduce services already provided by Lead Centers as this would be a waste of resources. One CRP director noted that in the first phase CRPs, some Centers chose to invest in developing their own services to assist them with the management and reporting of programs:

> *"There are plenty of opportunities on IT, etc. but it doesn't make sense for the CRPs to invest in it, as a couple of CRPs did in the first phase - the system CRPs – and then it disappeared and all that investment was thrown down the tube. So trying to rationalize what is the right way to invest."*

3 Recommendations for Improved 2022-2030 Research Focus, Management and Delivery

In this final section of the report, we draw on the evidence of our review of evaluative literature, combined with the insights provided by interviewees and focus group participants, to lay out a series of forward looking recommendations options for improving CGIAR research focus, management and delivery in the 2022-2030 period. The recommendations are presented using the same format of the three delivery domains of focus, management and delivery. Under each domain, we provide a clear set of key bulleted recommendations drawn from the narrative.

3.1 Strengthening program and platform focus

In this Section, we capture the forward-looking insights around strengthening the focus of CRP portfolio design, linking evidence-based theorizing of change and impact contribution as part of a coherent and clearly-focused A4RD approach. We emphasize the following recommendations:

- Improve clarity of objective-setting at System level towards a smaller number of priority research areas (cf. the four high-level outcomes identified at the Science Leaders meeting in Montpellier) set via a transparent process, with CRP and FP focus then hierarchically contributing to these high-level objectives;
- Strengthen evidence-based program portfolio priority assessment, bringing in mixed methods and looking beyond attribution to systemic contribution;
- Focus this priority setting more purposefully on AR4D value chains, delivering and scaling for impact and considering multidimensional metrics of change; and
- Secure pooled funding allocations that are sustainable, transparent and predictable to ensure a focus on end-to-end research, with funding delivered through staggered rounds of research programming.

3.1.1 Towards focused CRPs within a prioritizing System: Improve System level clarity of objective setting and strengthen evidence-based CRP portfolio priority assessment

This Review has surfaced a widespread evaluative consensus that there is an opportunity to improve the clarity of objective setting at System level towards a smaller number of priority A4RD research areas with a more focused and trackable set of impact pathways.[30] CRP portfolio priority setting can then fit to this higher-level focus and the System has a clearer narrative reporting contribution at higher levels of outcome to impact. This will require at the same time strengthening donor engagement in early-stage research prioritization to avoid down-the-line donor imposition of their own (sometimes changing) priorities.

The Science Leaders recognized an opportunity here to strengthen the analytical approach to evidence-based program portfolio priority assessment, bringing in mixed methods and looking beyond attribution to systemic

[30] To this end, the Science Leaders at their recent Montpellier meeting identified a set of high-level outcomes (aligned to the SLOs and selected SDGs) that would result from their pooled research. They then identified, as a 'best first attempt', a set of four proposed high level research areas (breeding and crop/ animal health; production, land and water systems; markets, investments and policy; and food consumption, demand and diets) and started to define what topics might be located in each research area. The output of this work is captured in the *SRG Theme 1 Briefing for DGs*, July 19th.

contribution based on insights from scientific foresight exercises and impact assessments. This evidence-based scientific approach will need to be reconciled with the political process of early donor engagement and contribution to priority setting that stems from their own political needs. The key will be to combine these approaches in a way that gets the right balance between politics and robust evidence of need.

It will be critical that this redoubling of emphasis on priority setting also recognizes that CGIAR science contributes to change in a longer and more complex systemic way, and one that includes non-monetary, political economic and social dynamics. Science has multiple uptake pathways over varied, sometimes, long time trajectories while partnerships with development partners are essential for impact. As one recent paper on the tension between research and development at the heart of CGIAR policy and impact culture concluded:

> *"While donors legitimately ask research organizations to position their research within plausible 'theories of change', the donor community itself is applying a flawed meta-theory when assuming a straight line between research activity and development impact. No matter how broadly researchers conceptualize their role, such impacts usually remain outside their sphere of influence. A final recommendation, therefore, is to base the theories of change used in the CGIAR system on scientific insights regarding socio-technical transition pathways, scaling, policy processes and the role of research therein, and thus on more realistic ideas about the role of science in innovation and development trajectories. Fostering a true dialogue about what this entails is a key condition for rebuilding trust between donors and other actors in the CGIAR, and hence for turning the CGIAR reform into a success."*[31]

The ISPC recognized this direction of travel in its 13th meeting held in May 2016 in identifying the need to value "non-market and non-quantifiable outcomes" as well as the political economy of impact.[32] The PIM Director translates this challenge into a recommendation that the PIM foresight "horizon scanning" work, combined with more quantitative modeling work done under PIM, could be integrated within a cross-program initiative or Community of Practice.[33] This would draw on good practice in priority setting analysis emerging out of CRP methodological innovation. The emergence of innovations under CRPs is illustrated above by the initiative of RTB based on Return on Investment modeling (see Box 1 in Section 2 above). The next stage in this ongoing challenge will be to new find new approaches to measuring ROI on non-marketable and less quantifiable benefits.

3.1.2 Focus this priority setting more purposefully on AR4D value chains

CRP stakeholders clearly articulate the enabling role and positioning of their program within end-to-end delivery processes. The need for strengthened System-wide attention to delivery for impact is now on the System radar, with recognition, as indicated above, on the part of the ISPC to improve political economy and policy analysis to enable research program managers to identify risks and opportunities and navigate policy processes for better impact, either through improved in-house R4D capacity building or through strengthened partnerships.

CRPs have been working innovatively to strengthen their research contribution to delivery-for-impact, and this provides the basis and momentum for moving forward. It includes (among others) an enhanced focus on the enabling environment for unblocking policy knots and realizing private sector investment –as illustrated above by the work of

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[31] Leeuwis, C., L. Klerkx and M. Schut (2018). "Reforming the research policy and impact culture in the CGIAR: Integrating science and systemic capacity development", in Global Food Security 16, 17-21. The authors' emphasis.

[32] Ibid, p.1.

[33] Frank Place, PIM CRP Director, pers. comm.

FISH (see Box 8 above in Section 2). Similarly, work advanced in the past two years under RTB has focused on assessing readiness for taking innovations to scale (see Box 9 above). With CRPs having really pushed this forward across the System, this is the moment to acknowledge this and take the next step to systematising delivery-for-impact across research program portfolios.

3.1.3 Secure pooled funding allocations that are sustainable, transparent and predictable, with funding delivered through staggered rounds of research programming

This phased approach critically requires backing by secure pooled funding. CRPs were originally conceptualized to function with some 50% of pooled funding but the pooled funding trend has been downward. Donors at times voiced a lack of trust in CRP effectiveness while continuing to fund projects through W3 (bilateral project) investments. At the heart of this is a 'funding paradox', in which Center-specific project funding was *de facto* seen as a safer and more controllable funding mechanism by bilateral donors even as those same donors called for more joined-up operations through CRPs/Platforms. The fact that pooled funding has never reached 50%, thus remaining lower and unpredictable, is widely seen to be at the main challenge going forward. Thus, we have to be careful not to design a System again that assumes high levels of funding which don't arise.

Moving forward there is a clear consensus that there needs to be a minimum guaranteed proportion of pooled funds available to CRPs. The IEA evaluation Synthesis Review, for instance, recommended that a minimum share of pooled W1 /W2 funds in a CRP budget should be in the range of 30-35% if these funds are to provide sufficient leverage to implement an integrative and collaborative research program across Centers. In fact, the Synthesis Review proposed that CRPs should move away from allocating W1/W2 funds according to a pre-defined formula and establish competitive transparent mechanisms to allocate these funds to the highest priorities and the best science.[34] Drawing on best practice from comparator research program grant making, there is an opportunity to challenge or at least nuance this recommendation by recognizing that there is a wide range of methods and stages of competition that are not just 'market based'.

Accompanying this key funding question is the challenge of making the CRP delivery cycle more efficient. While much of this discussion centers on management arrangements (see below), there is an additional funding component here, with the CRPs cycle from focus to delivery described by some as having high transaction costs. A key emerging recommendation and a 'quick win' is to stagger the timetable for planning, approval and implementation of programs and projects, rather than beginning a round of funding all at the same time.

3.2 Strengthening governance and management arrangements

In this Section, we address emerging forward-looking insights around strengthening governance and management arrangements for CRPs and Platforms. These insights point to the following recommendations:

- Streamline and strengthen CRP research management as part of a continuing shift to cross-Center programming that presents an alternative to the existing 'Lead Center' model, drawing where appropriate on comparator research consortiums and programs;

[34] Birner and Byerlee (2017), op cit.

- Strengthen CRP adaptive management practices and supporting information systems in a continuing move away from a linear research model (see domain 3 below); and
- Ensure that Platforms are effectively integrated into System governance, especially in the case of Genebank with its distinct independent status.

3.2.1 Streamline and strengthen CRP management as part of a continuing shift to integrated cross-Center programming

For the most part, CRPs have followed the 2014-approved CGIAR governance structure. While there remain governance challenges, including around accountability and the risk of Lead Center organizational capture, a major area for improvement emerging from this Review is to ensure that the CGIAR matrix structure is supported by effective and sustainable management arrangements.

Building on the analysis of CRP management types above, and interpreted through discussions with the Director of the CGIAR Research Program on Agriculture for Nutrition and Health (A4NH) as well as others, this move to better CRP management requires the recognition that the System currently has too many CRPs with too many different management structures with associated high transaction costs, including Science Leaders spreading their time across too many CRP commitments. The recommendation here is that the System should focus on streamlining and improving management, directly addressing the organizational capture risks associated with the Lead Center model while ensuring that management structures are inclusive and accountable.

In making these improvements towards streamlined CRP management arrangements, it will be important to build on the achievements of participating partners in developing networks of trust and reciprocity, drawing on a unique collaborative culture and identity and a truly collaborative way of working. The identity of the Lead Center was not that important in the strategic design process. Its role was to provide services rather than to drive the priority setting (which was the task of the participating partners). Moving forward, getting all CGIAR staff to think and act more in terms of their CRP and less merely in terms of their Center affiliation will require a culture shift –a point acknowledged by the Directors of the integrating CRPs.

In contrast, single crop/ Center CRPs involve a relatively small number of partners, with one lead Center typically closely matched in thematic expertise. The emerging recommendation here is that there should not be parallel structures established that involve a single Center. Instead, pooled funding should be deployed and used to address issues of common concerns across several Centers, always focussing on cross system working including exceptionally innovative, new areas of work.

While the relative uniqueness of the CRP matrix model has been widely noted, there remains an opportunity to look closely at broadly comparable research consortiums and programs in designing an improved CGIAR research program modality, with a focus on competitive processes, performance management linked to monitoring evaluation and learning, and reporting (discussed further below).

3.2.2 Strengthen CRP adaptive management practices and supporting information systems

The experience of CRPs in running with a ToC approach was based in part on their realization of the utility of adaptive management for improved delivery.[35] To this end, CCAFs is notable in setting quantifiable baselines in line with their ToC pathways and monitoring delivery from baseline against stated outcomes The CGIAR White Paper, reflecting the views of CRP and Platform interviewees, reinforced the need for a more flexible and less linear, activity driven approach, with learning around ongoing outcome evaluation being stressed.

Building on this shared understanding, there is an opportunity going forward to build capacity and mainstream this concept of an adaptive management approach across CRPs, building on better outcome M&E based utilizing realist evaluative approaches, mixed methods (qualitative and quantitative), just-in-time feedback and 'evaluative practice' management approaches. This would require a minimum level of comfort across the System and within Center work culture with reflexive discourse about what works and what not, and why, being able to challenge initial assumptions underpinning alternative ToC pathways, and timely take corrective action. There was some evidence in the discussions that this change in culture is indeed occurring as a result of establishing CRPs, but that this change process needs to be underpinned by increasingly nimble and outcome-evaluative MEL systems and an ongoing strengthening of researcher capacity to engage in such reflexive processes. Simplifying indicators will involve shifting from output to outcome tracking and strengthening contribution/influence analysis. Moreover, there is a need to work collaboratively with upstream and downstream partners to put adaptive management into practice through flexible contracts that do not reify activity tracking as a proxy for performance. Instead, these contracts might shift partnerships towards MEL around outcome level aspirations while improving the political antennae of partners delivering through 'real time adaptation'.

As previously highlighted, staff will be able to engage in adaptive management, if they have confidence that their budget is reasonably secure. Donors will also have to be willing to provide additional funding for solid monitoring systems utilizing mixed-method approaches at Center/CRP level and rigorous evaluative studies –an activity that is not feasible with current levels of W1/W2 budgets. Indeed, this is a great opportunity for funder cost-sharing and streamlining.

3.2.3 Ensure that Platforms are effectively integrated into System governance

Finally, the Review considered the fit of Platform governance and management arrangements to the System architecture. Each of the three Platforms plays a valuable, if distinct, role with shared principles of providing cross-Center services, sourcing innovation across the System and acting as a forum for discussion and mutual learning. The coordinator of the Big Data Platform, for instance, described his platform as claiming a place in the digital agricultural space and acting as a "docking station" for particular thematic areas, reducing transaction costs in the collaboration, and generating more feedback loops *vis-à-vis* outcomes.[36]

This distinct role for CGIAR Platforms is reflected in their governance and management arrangements. The three CGIAR Platforms have more individually tailored governance and management arrangements with their own internal performance metrics. In the case of the Genebank Platform, we elicited a particular set of CGIAR-related governance

[35] Thornton *et al*, 2017, op cit, 148

[36] Brian King, Big Data Platform Coordinator, pers. comm.

transaction costs linked to the global public good status of Crop Trust servicing genebanks worldwide both within and outside the CGIAR System (See Box 5 above).

3.3 Improving the delivery of research programs

In this Section, we turn to the forward-looking insights gleaned around improving the delivery of CGIAR research programs. Based on the Review findings we identify the following recommendations:

- Strengthen intelligent design of partnerships for delivery as a condition of pooled funding, informed by emerging models and backed by allocated time and resources for partnerships;
- Strengthen Platform 'front end' support for delivery around Communities of Practice and draw-down services for political economy/ policy processes, private sector investment and scaling;
- Strengthen adaptive management of program delivery, backed by lighter and 'just in time' outcome-evaluative reporting that builds on the all the work done over the past two years and does not reinvent the wheel; and
- Improve efficiency of Services provision while fostering Center-based pockets of research support services available to all other Centers (e.g. MARLO based at CIAT).

3.3.1 Strengthen intelligent design of partnerships for delivery as a condition of pooled funding

CGIAR's strengths in AR4D are widely acknowledged to be built on its in-country presence and networks, combined with its agricultural research capability. Going forward, the System must maintain these core strengths while evolving its strategic approach to partnership in order to remain a vital part of the A4RD architecture:

> *"For sustainability of the research program, Centers must continue to be strong and credible partners, maintaining not only ground presence and infrastructure, but also scientific expertise in core areas, and they must collaborate with organizations that have strong capacity for scaling and their own sources of funding."*[37]

The best practice in CRP delivery has articulated the role of partnerships in linking upstream research with downstream delivery. CCAFS's three thirds principle is notable in this regard. CCAFS colleagues are aware that funding needs to follow these principles, and that a longer-term secured funding timeline allows for partnership development to be sustained and to contribute to higher-level outcomes at scale:

> *"Embracing the three-thirds principle also implies different budgeting and funding structures, so that appropriate levels of resources are allocated to capacity building, communications and engagement with the wide range of different partners likely to be needed to produce outcomes. These elements need to be budgeted for explicitly within a project life-cycle, rather than as an after-thought and left to others or outsourced."*[38]

Key to effective partnerships for delivery to 2030 is of course, secure, reliable and long-term funding arrangements. There was a sense in this Review amongst CGIAR stakeholders that expecting a rise of pooled funding from its present flat lined 20% to a proportion in line with novel CRP modality conception of 50% is unrealistic in a climate

[37] McLeod *et al*, 2017, op cit, viii
[38] Thornton *et al*, 2017, op cit, 151

where multilateral funding of this sort is under threat. The recommendation here is to reimagine how bilateral funds can be utilized to support 'future proof' partnerships. This draws on the recent review of CGIAR partnerships that posits this reimagining of bilateral funding arrangements, along with more strategic investment in bilateral funding arrangements with private sector and emerging economies:

> *"there needs to be better analysis and innovative thinking on how bilateral funding can better serve strategic partnering and how co-financing of research and development by recipient country governments, private sector and others could be better stimulated and harnessed for supporting CGIAR's objectives."*[39]

3.3.2 Strengthen Platform 'front end' support for delivery around Communities of Practice and draw-down services

The three CGIAR Platforms play an invaluable cross-Center service role in information delivery, managing quality and standards and providing a forum sharing of insights and good practice. As discussed above, the Platforms tend to focus their cross-Center service provision function on 'back end' support but could do more to support delivery. To this end, stakeholders in this Review discussed the opportunity to become more imaginative in creating a broader scope for CGIAR Platforms that includes service support for better delivery.

There is an opportunity as part of the 2030 Plan process to revisit this scope of work, particularly in light of ongoing debates around improving the delivery and scaling of CGIAR research products and technologies. Critical areas of understanding for better delivery were discussed in Section 2 and include the need to better understand political economy enabling environments and investment partnerships to take products and services to market at scale.

In respect of investment partnerships, previous evaluative material has picked up on the gap between the System's acknowledgement of the importance of private sector involvement and the absence of a System-wide road map or at least a set of options for doing so. A recent IEA evaluation, for instance, cited the SRF 2011 conceptualization of CRPs *"as a vehicle for integration of public and private research"*,[40] with the Fund Council subsequently flagging that the rationale for public-private partnerships in CGIAR would need to be studied in more detail. At the same time, several donors interviewed for the IEA evaluation highlighted the importance of private sector collaboration.

In respect of political economy and policy processes, the importance of understanding the enabling environment for delivery has been widely cited in this Review as critical to strengthening end-to-end research delivery. The work of FISH on country-level political economy analysis (see Box 8) is instructive in illustrating how CRPs are already working to identify and navigate enabling environment opportunities and blockages. Meanwhile, ongoing tool development, such as the RTB's Scaling Readiness assessment tool (see Box 9) shows how CRPs are thinking about linking ongoing enabling environment assessment to decisions around technology delivery and scaling.

The FISH Director and other colleagues interviewed for this Review identified an opportunity here to strengthen delivery by developing a cross-Center 'delivery end' or 'pipeline' Platform support function. This would help with policy analysis and build capacity amongst program and FP managers to navigate through complex political systems and partnership opportunities to get delivery of impact from research. This function could build on the support function of a Platform like Excellence in Breeding that uses a structured 'stage gate' process to support Centers to get breeding programs organized. Something similar, but that goes beyond the stage gate process, could support innovation in policy analysis and policy process and partner management. A simple draw-down service, accessible

[39] McLeod et al, 2017, op cit, xi

[40] McLeod *et al* (2017), op cit, p.19.

across all portfolios, might support policy enabling, private sector investment and potentially the steps along the impact pathway towards scale. This service would need to reconcile the valuable in-house political and policy knowledge with external partnerships that deepen this expertise. The service could perhaps be a global support platform with a Community of Practice element, linking to tailored country-level support, that shares and reflects on innovative and best practice, enabling CRPs and FPs to discuss what works, when and why, as well as tackle key underlying concerns that may be holding up progress, such as the tension between science and profits, science and politics, and so on.

3.3.3 Strengthen adaptive management of program delivery, backed by lighter and 'just in time' outcome-evaluative reporting

In Section 2 above, we captured a broad consensus amongst stakeholders across the System that the quality of reporting had improved markedly under the two CRP phases. Technically, this quality was built on the skills of the people involved and enabled by better MIS. This included the Managing Agricultural Research for Learning and Outcomes (MARLO) and the Monitoring, Evaluation and Learning (MEL) online platforms assisting CRPs, Platforms and Centers in their strategic results-based program planning and reporting of research projects. It covers the project cycle from planning to reporting and learning. Reports generated by the system support outcome-focused programmatic reporting with additional synthesis at the flagship and cross-cutting levels. Institutionally, the improvement has been enabled by the CGIAR's enhanced commitment to performance-based reporting and an outcome evaluative MIS approach, as instructed in its CRP 2 proposal guidance document. The adoption of MIS systems to track the ToC results chain and understand complex contribution in the CCAFs program, supported by online reporting ICT (see Box 10) is powerfully illustrative of this progress.

Going forward it is widely agreed that the System shouldn't lose this progress as part of any 2030 Plan reorganization. That said, discussions with stakeholders outside the System elicit concerns that there is still work to be done to reach a timely and clear reporting system that enables donors to see progress against outcomes and helps donors to interpret program contribution to outcome-level changes. Reporting under 'comparator' research programs (albeit programs with essentially one donor funding one program) such as the USAID Innovation Labs is reportedly built on clear lines of activity and reporting that throw into relief the reporting challenges thrown up by the pooled model of delivery under CGIAR CRPs. Continuation of existing work in progress with donors will be required to understand what they want to change in order to improve the timeliness and clarity of reporting, including improving the communication of results.

3.3.4 Improve efficiency of Services provision while fostering Center-based pockets of research support services available to all other Centers

Finally, CRP Directors and other stakeholders identified the high transaction costs and inefficiencies associated with Lead Centers working with duplicating IT, financial and other services. There is clearly a need going forward to improve CRP services provision efficiency. A recent companion document to the CGIAR 3-year Business Plan (2019) captures the main points for this Review well.[41] The document argues that the goal should be to have effective, efficient and low- transaction systems that provide the System and its component entities with the best platform to do its work. This ethos of collaboration and shared services is engrained in the Charter of the CGIAR System

[41] CGIAR (2018). "Developing an action plan on shared services: A discussion paper", System 3-Year Business Plan (2019-2021) Companion Document, 2nd November.

Organization under various roles and responsibilities of the Centers, System Management Office, and the System Management Board. While these roles and responsibilities encourage shared services and collaboration, each Center also retains the right to *"participate, at its own discretion and on a voluntary basis, in shared services and other related non-mandatory activities or policies."* The emerging recommendation from this Review is that it will be important to construct a more efficient and flexible shared service modality to support research program delivery.

There is an additional recognition from all CRP directors that, given the current timeframes of CRP funding cycles, it does not make sense to invest in CRP-exclusive services. In the first CRP Phase, there were examples of CRPs investing in services that were later abandoned. However, as alluded to above, there is an important nuance here: CRPs are not legal entities so they rely on Center finance and legal services while striving to ensure both that their small management units retain balance and independence among the CRP's Center partners and that CRP finances are not 'captured' by the host Center. This is a very important issue that needs more careful consideration and thought in the next stage of design in order to ensure the enhanced application of CG-wide standards.

ANNEX I: List of CGIAR Interviews Conducted

Name	CRP/Platform/Center
Brian King	Big Data Platform
Bruce Campbell	CCAFS (I-CRP)
Charlotte Lusty	Genebank Platform
Frank Place	PIM (I-CRP)
Graham Thiele	RTB (A-CRP)
Iain Wright	ILRI
John McDermott	A4NH (I-CRP)
Mike Phillips	FISH (A-CRP)
Tom Randolph	Livestock (A-CRP)
Victor Kommerell	WHEAT (A-CRP)

ANNEX II: Overview of Comparable Organizations, Research Partnerships, Programs[42]

Modalities	The Global Research Alliance	The Global Challenge Research Fund (GCRF) - UK	USAID-Feed the Future Innovation Lab (IL)	Belmont Forum	World Climate Research Program (WCRP)	EU Research Horizon 2020	WHO: Global Research Alliance on Agricultural Greenhouse Gases	Global Science Forum (GSF, Organization for Economic Co-operation and Development, OECD)	The Global Plan of Action (The International Treaty on Plant Genetic Resources for Food and Agriculture, ITPGRFA)
Purpose	The Global Research Alliance is focused on research, development and extension of technologies and practices that help deliver ways to grow more food (and more climate-resilient food systems) without growing greenhouse gas emissions. The vision for the Alliance is a voluntary network of scientists, policy makers, farmer organizations and others, working together to gain a better understanding of how GHG emission intensity can be reduced, while food security can be increased.	In November 2015, the government announced a new funding mechanism for research on international development, the Global Challenges Research Fund (GCRF). As an aid-funded instrument, the GCRF's primary objective is the promotion of the development and welfare of developing countries. Within this remit, the Fund has two ambitions: 1) to promote UK research excellence, ensuring that "UK science takes the lead in addressing the problems faced by developing countries"; and 2) to address global development challenges by generating "innovative solutions to intractable development issues". Its approach to global challenges is	Feed the Future is the U.S. Government's global hunger and food security initiative. The initiative created 24 Feed the Future Innovation Labs (IL) (formerly known as Collaborative Research Support Programs (CRSPs). The Innovation Labs are an integral part of the Feed the Future Food Security Innovation Center, established to implement the Feed the Future Global Hunger and Food Security Research Strategy. The 24 Feed the Future ILs resulted from a revamping of the Collaborative Research Support Programs (CRSPs) following a Board for International Food and Agricultural Development) review in 2012. After 2012,	Established in 2009, the Belmont Forum is a partnership of funding organizations, international science councils, and regional consortia committed to the advancement of interdisciplinary and transdisciplinary science.	WCRP was established in 1980 under the joint sponsorship of the International Science Council (ISC) (previously the International Council for Science (ICSU), until July 2018) and the World Meteorological Organization (WMO). In 1993 the Intergovernmental Oceanographic Commission (IOC) of UNESCO also became a sponsor. The objectives of WCRP are to determine the predictability of climate and to determine the effect of human activities on climate.	Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness. It is the EU's biggest Research and innovation program with nearly 80 billion of funding available over 7 years (2014-2020), in addition to the private investment that this money will attract. Horizon 2020 is at the intersection of many of the European Commission's ten policy priorities, which have been used as the basis to create a set of specific priorities for this work program.	The Global Research Alliance on Agricultural Greenhouse Gases is a Research Alliance based on voluntary, collaborative efforts of over 52 member countries. The Alliance is aimed at research, development and extension of technologies and practices that will help to produce more food without increasing GHG emissions. Research is used by members to support national policy development and decision- making.	The Global Science Forum (GSF) was established in 1992 as the 'Mega-science Forum' in order to act as a venue for OECD members and relevant partner countries to discuss issues relating to large international research infrastructures. The overall objective of the OECD Global Science Forum is to support countries to improve their science policies and share in the benefits of international collaboration.	The Global Plan of Action (GPA) is a major component of the FAO Global System on Plant Genetic Resources for Food and Agriculture, and is implemented by member states of the intergovernmental Commission on Genetic Resources for Food and Agriculture (CGRFA). The CGRFA requested the development of a rolling Global Plan of Action with programs and activities aimed at filling the gaps, and overcoming constraints and challenges identified through periodic assessment conducted by the FAO Report of the State of the World's Plant Genetic Resources for Food and Agriculture. The Second Global Plan of Action for Plant Genetic Resources for Food and

[42] All information comes from the websites of the organizations unless otherwise cited.

		described as "solutions-focused" and "challenge-led". The Fund also aims to strengthen research capacity in developing countries through research partnerships with UK institutions. The GCRF will contribute to realizing the ambitions of the UK aid strategy and to the UN Sustainable Development Goals (SDGs).	CRSPs were rebid over time, often to new lead universities, and were either renamed Feed the Future ILs to better align them with Feed the Future, or they were closed.						Agriculture (Second GPA) is a strategic framework for the conservation and sustainable use of the plant genetic diversity. It was prepared under the aegis of the Commission on Genetic Resources for Food and Agriculture and adopted by FAO Council in November 2011.
Priority setting	The Alliance currently supports three research groups: croplands, livestock and paddy rice. Connecting these three research groups are cross-cutting teams devoted to: soil carbon/nitrogen cycling and inventories/ measurement.	GCRF aims to address global challenges in three main themes: i) equitable access to sustainable development, ii) sustainable economies and societies, and iii) human rights, good governance and social justice. Across these themes, 12 challenge areas have been identified. GCRF is also creating initially six strategic Challenge portfolios, aligned with the SDGs. These will be developed by Delivery Partners across the whole GCRF program: Global Health; Food Systems; Security Protracted Conflict, Refugee Crises and Forced Displacement; Education; Resilience to Environmental Shocks and Change; and Cities and Sustainable Infrastructure. The GCRF will support those	Priorities are outlined in the Global Hunger and Food Security Research Strategy. Many of these Innovation Labs are organized around a value chain and include discovery research on globally relevant problems, with a strong applied research component designed to support Feed the Future focus countries. At the same time, 14 new ILs were added to the portfolio. Many of these were narrowly defined in terms of a specific problem of global importance to be addressed in five-year time frames, particularly tolerance to abiotic stresses for climate resilience in major food staples, such as drought and heat tolerance in beans, drought tolerance and fungal resistance in cowpeas, and vaccine	Forum operations are guided by the Belmont Challenge, a vision document that encourages International transdisciplinary research providing knowledge for understanding, mitigating and adapting to global environmental change. New themes are developed through a scoping process and made available for proposals through the Belmont Forum website and its Grant Operations page.		Relevant Focus areas: 'Building a low Carbon, Climate-resilient Future' (budget of €3528 million) Connecting economic and environmental gains – the Circular economy Focus areas were selected by using the criteria: • degree of fit with politically derived drivers; • European added value, with convincing description of expected impact; • potential for engagement of the stakeholder community; • integration across the work program; • achieving integration of cross- cutting objectives, including	The Alliance supports three research groups (croplands, livestock and paddy rice) and two cross-cutting teams (soil carbon and nitrogen cycling and inventories and measurement).	Independent expert panels decide specific priorities from among the broader range set by advisory groups of scientists (CGIAR and non-CGIAR). The GSF membership includes 33 countries that are either OECD members or Key Partners, and the European Union. National delegates are from academia, funding agencies or science ministries.	Second Global Plan of Action assists in priority, including identifying priorities for the Funding Strategy of the International Treaty. The Second GPA comprises 18 priority activities organized into four main areas: in situ conservation and management, ex situ conservation, sustainable use, and sustainable institutional and human capacities. The main focus is at the national level for country driven actions on the various priority activities.

		activities that can demonstrate that they have the strongest potential for impact. The GCRF does not have an explicit priority list of developing countries. Instead GCRF funding supports universities, industry and research organizations to do disciplinary and interdisciplinary challenge-led research and quick responses to emergencies where urgent research is needed. There are plans to develop a number of thematic Research Hubs and 'strategic portfolios' to address particular development challenges.	development for Rift Valley Fever. Ten of the new ILs use a consortium model in which research partners are identified in advance of award, in the competitive application process. For example, the Climate Resilient Beans IL is implemented by a consortium led by Pennsylvania State University and includes several other U.S. universities, USDA, the International Center for Tropical Agriculture (a CGIAR Center), and national research programs in partner countries. The ILs also address most of the priority value chains in staples, legumes, livestock, and fish, as well as irrigation, sustainable intensification, and nutrition. Moreover, new or revamped ILs with a strong applied research focus have carefully developed priorities through participatory processes in the focus countries. New ILs have also been added for discovery type research, often in the same value chains as existing ILs. For example, new ILs were initiated for climate resilient sorghum and for climate resilient millet, adding two ILs in			coverage of the innovation chain.			

			addition to the longstanding IL on sorghum and millet.						
Resource allocation/ Funding modalities		The Fund will run for five years between 2016-2021 and draw down £1.5 billion of Official Development Assistance (ODA) funding over that period.	US Congress approves the budget for Feed the Future annually.		WCRP funding is provided by its co-sponsors (The International Science Council, Intergovernmental Oceanographic Commission of UNESCO, and World Meteorological Organization), as well as from the voluntary contributions of certain countries. In 2017, the countries that provided additional financial support were: Australia, Austria, Canada, China, Finland, Germany, Japan, New Zealand, Russia, and United States of America. It enables the Program to initiate, encourage and stimulate high-priority climate system research.			GSF baseline funding is approved on a bi-annual basis and a two-year Program of Work and Budget (PWB) is prepared as part of this process. This PWB lays out the allocation of resources to activities for the forthcoming two-year period (e.g. Jan 2015-Dec 2016). Preparation of the PWB is the responsibility of GSF as a whole, prior to approval by CSTP and the OECD Budget Committee. The GSF mandate and the current document cover a five-year period, i.e. 2.5 PWB periods, and provide a longer-term framework, which helps ensure continuity between budget planning cycles. The PWB provides formal shorter-term milestones for assessing progress and making adjustments to the longer-term strategy.	The International Treaty on Plant Genetic Resources for Food and Agriculture provides for a Funding Strategy, which aims to enhance the provision of financial resources for the implementation of the Treaty. The Funding Strategy includes a Benefit-sharing Fund which supports projects and programs for the benefit of farmers and local communities in developing countries and countries with economies in transition who work towards maintaining and increasing the use of genetic resources for food and agriculture. The Secretary collaborates with international mechanisms, funds and bodies, including the Global Crop Diversity Trust, to operationalize the Benefit-sharing Fund of the International Treaty.
Governance	Membership and governance arrangements are underpinned by a Charter, signed by all participating countries. This Charter establishes the GRA Council, which is the	The governance of the GCRF will be managed across the delivery partners, with strategic oversight from the Department for Business, Energy and Industrial Strategy (BEIS). BEIS ODA	Most ILs have external advisory boards that draw on individuals from academia, industry and from CGIAR Centers. While the primary job of these boards is to advise and help shape the program, they may	Steering Committee elected by Belmont Forum members. It consists of 8 members two co-chairs. The Belmont Forum Secretariat serves as the administrative arm of the forum and is tasked			Membership and governance arrangements are underpinned by a Charter, signed by all participating countries. This Charter establishes the GRA Council, which is the representative	The OECD Council is the organization's overarching decision-making body. It is composed of ambassadors from member countries and the European Commission and is	The Commission on Genetic Resources for Food and Agriculture is the only permanent intergovernmental body that specifically addresses biological diversity for food and agriculture. It initiates,

	representative body of all member countries. The current Chair of the Council is Germany.	Board, to be chaired by the Minister of State for Universities, Science, Research and Innovation. The Board will, amongst other responsibilities hold delivery partners to account, oversee plans for evaluation, and engage with other groups in government on ODA funding. Independent external advice on the strategic direction of the GCRF will come from the GCRF Strategic Advisory Group (SAG), with membership decided through an open nomination process. Final decisions on the GCRF's strategy, design and operating principles rest with the science minister.	also help to broker relationships with the host country institutions. USAID doesn't mandate the ToRs for these advisory committees, but they tend to be more or less the same.	with carrying out decisions made during the plenary meetings. The Secretariat, hosted at the French National Research Agency (ANR) in Paris, consists of eight members and is headed by the Executive Director.			body of all member countries. The current Chair of the Council is Germany.	chaired by the Secretary-General. It meets regularly to discuss key work of the Organization, share concerns and take decisions by consensus. Once a year, the OECD Council meets for the Ministerial Council Meeting, which brings together heads of government, economy, trade and foreign ministers from member countries to monitor and set priorities for our work, discuss the global economic and trade context, and delve further issues such as the budget, accession and other priorities.	oversees and guides the preparation of global sectoral and cross-sectoral assessments of genetic resources for food and agriculture With its more than 170 members the Commission holds each biennium a regular session. It may also decide to convene extraordinary sessions as necessary, subject to the approval of the FAO Council. The Secretariat of the Commission prepares its regular and extraordinary sessions and follows up on the Commission's requests during the intersessional periods. The Secretariat also supports the work of the Commission's subsidiary bodies, such as the Commission's technical working groups. The purpose of these "sectoral working groups" is to review the status of, and issues related to, biodiversity in the areas under their respective competences, to advise and make recommendations to the Commission on these matters, to consider the progress made in implementing the Commission's program of work and to address

									any other matters referred to them by the Commission.
Management	Research Groups have been set up to address these areas of work, through work plans that bring countries and partners together in research collaborations, knowledge sharing and best practice, and capacity building among scientists and other practitioners. A Secretariat, currently hosted by New Zealand, supports the work of the Council and the Research Groups.	The GCRF falls under the authority of the Department for Business, Energy and Industrial Strategy (BEIS). It is administered through Delivery Partners (DPs) including RCUK/UKRI and the seven Research Councils, the four higher education academies, the UK Space Agency, and the four national higher education funding councils. These delivery partners receive funding from the GCRF in two ways. The largest share of the funding is given to them individually as annual allocations, from which they award grants onwards to research institutions, industry or non-pro t organizations (individually or in consortia) through a competitive process. Most of the remaining 'unallocated pot' of £691 million is placed in two 'Collective Funds' – one for the Research Councils and one for the Academies. The Collective Funds accept joint bids from all the Research Councils or all the Academies, thus	For each IL there is a lead institution which is formally designated the Management Entity (ME) with responsibility for leadership, management, and cooperative agreement administration, and for conducting research and capacity building. The ME manages and organizes partners, components and activities of the ILs. They are responsible for developing annual work plans, monitoring and reporting and for spending performance. Only US universities that meet USAID's technical and institutional requirements can be a ME.	Scientist and stakeholder support are made possible through Collaborative Research Actions (CRAs), which are the Forum equivalent of a call for proposals. CRAs fund multiple projects. Each CRA is administered by a Group of Program Coordinators (GPC) and the Thematic Program Office (TPO). GPC is responsible for the practical implementation of the CRA. The TPO is composed of typically one or two funding organizations that lead the development and administration of the call. The Group of Program Coordinators is the body of program representatives involved in each CRA development, proposal review, and award process. Because different organizations invest in different themes, the composition of the Group of Program Coordinators is different for each CRA. It is not required to be a Belmont Forum member to provide funding support to a CRA. Many organizations in the	WCRP is organized as a network of core and co-sponsored projects, working groups and cross-cutting initiatives. The organizational structure consists of: The WCRP Joint Scientific Committee (JSC) Advisory councils: the WCRP Modelling Advisory Council (WMAC) and the WCRP Data Advisory Council (WDAC) WCRP Working Groups WCRP Core Projects WCRP Grand Challenges The Joint Planning Staff (JPS)	New management modes (NMMs) are a new way to manage Horizon 2020 implementation activities through the use of external bodies (e.g. executive agencies, joint undertakings) with the aim of increasing the program's efficiency and effectiveness The Commission services are expected to focus on core institutional tasks, such as policymaking, implementation and monitoring of the application of EU law, and strategic management, whereas the NMMs aim to deliver the effective and efficient implementation of Horizon 2020. Horizon 2020 grant management has been delegated to four executive agencies: REA, EASME, ERCEA and INEA.	Research Groups have been set up to address these areas of work, through work plans that bring countries and partners together in research collaborations, knowledg e sharing and best practice, and capacity building among scientists and other practitioners. A Secretariat, currently hosted by New Zealand, supports the work of the Council and the Research Groups.		The Commission may establish intergovernmental technical working groups, with appropriate geographical balance, to assist in specific areas of genetic resources. There is Intergovernmental Technical Working Group on Plant Genetic Resources for Food and Agriculture, Intergovernmental Technical Working Group on Animal Genetic Resources for Food and Agriculture, the Intergovernmental Technical Working Group on Forest Genetic Resources, and the Ad Hoc Intergovernmental Technical Working Group on Aquatic Genetic Resources for Food and Agriculture. Since 2015, the working groups have each been 28 Members Nations. The Members of the working groups are elected every two years, during regular sessions of the Commission. The working groups have terms of reference to guide their activities.

		bringing together different academic disciplines to tackle particular development challenges. So far, a total of £476 million has been allocated towards these two Collective Funds. The four UK Higher Education Funding Councils for England, Scotland, Wales and Northern Ireland also receive GCRF funding, which they allocate to research institutions based on the overall quality of their research. The £476 million allocated so far to the GCRF's two Collective Funds has the potential to achieve a sharper focus on development results. They promote joint work across the Research Councils and the Academies, in support of complex development challenges that need interdisciplinary effort. The GCRF delivery partners will coordinate with one another, through a Strategic Advisory Group (SAG) and other mechanisms. The primary purpose of the SAG is to advise on the strategic development of the GCRF, including; engagement with research and stakeholder		Groups of Program Coordinators are not members and participate according to their institutional interests.					National focal points/coordinators are nominated by governments. They are crucial for coordinating and facilitating the preparation of country reports, the implementation of the Commission's action plans and decisions and for monitoring the implementation and reporting back to the Commission.

		communities, the facilitation of new ideas and opportunities, and the development of a strategic research agenda. Each delivery partner will have put in place internal governance mechanisms for monitoring and assurance. A GCRF Delivery Forum will support integration and co-ordination across and between delivery partners, and with the SAG.							
Partnership	56 member countries, Farmers organizations, FAO, World Bank, NGOs, and government organizations, and scientists. There are no financial obligations associated with membership. Therefore, the Alliance seeks to leverage each member country's existing scientific expertise and resources in different agricultural systems and environments to make a more rapid and robust impact on the global issue of GHG emission and climate change. This is a collaboration to conduct research and share information for	Partners include UK universities, civil society, private sector, as well as policymakers and practitioners from the Global South. The GCRF will look to develop strategic relationships with key partner organizations in developed and developing countries, to ensure complementarity and avoid duplication, and explore, where appropriate, opportunities for joint or aligned activities. These partners include other UK and multinational, public and philanthropic organizations, and the delivery partners' global network of peer organizations; including National Academies, RCUK overseas offices, the Science and	Partners include US universities, universities in Feed the Future focus countries, CGIAR, NGOs & other ILs, USAID development partners, private industries.	Belmont Forum Partners are organizations that subscribe to the Belmont Challenge, but do not fund research and/or do not meet the criteria for membership. Members are legally allowed to mobilize resources from national or international research funds and are engaged in activities that address the Belmont Challenge. Members are the European Commission, German Research Foundation (DFG), French Research Alliance for the Environment (AllEnvi) Forum members and partner organizations work collaboratively by issuing international			56 member countries, Farmers Organizations, FAO, World Bank, NGOs, and government organizations, and scientists. There are no financial obligations associated with membership. Therefore, the Alliance seeks to leverage each member country's existing scientific expertise and resources in different agricultural systems and environments to make a more rapid and robust impact on the global issue of GHG emission and climate change. This is a collaboration to conduct research and share information for mitigating agricultural GHGs.		

	mitigating agricultural GHGs.	Innovation Network (SIN) and DFID in-country offices		calls for proposals, committing to best practices for open data access, and providing transdisciplinary training.					
Monitoring and reporting		Portfolio monitoring, evaluation, impact assessment and comparator studies will be used to meet the following requirement of the UK aid strategy: "All departments spending ODA will be required to put in place a clear plan to ensure that their program design, quality assurance, approval, contracting and procurement, monitoring, reporting and evaluation processes represent international best practice. Evaluation will build upon: the core criteria and recent best practice including evaluations of the Newton Fund, DFID programs and DFID-delivery partner partnerships. Evaluation will be used to develop a richer understanding of 'what works', in order to improve program design and implementation and ultimately maximize the global impact of research.	A performance evaluation is done for limited selected number of ILs and not mandated for all of them. It is usually conducted in year 4 and does not look at the quality of the research itself rather looks at how the ME managed a successful rigorous research program and met milestones. Programs may be renewed for a further final five years pending a good evaluation, continued relevance to Agency priorities and availability of funds from US Congress.						With the adoption of the Second GPA, countries have agreed that the overall progress on its implementation and the related follow-up processes will be monitored and guided by governments and other FAO Members through the Commission on Genetic Resources for Food and Agriculture. The Commission has adopted three PGRFA targets, a set of 63 indicators and a reporting format to monitor the implementation of the 18 priority activities of the Second GPA. The indicators take into account the Strategic Plan for Biodiversity 2011-2020.