



AGRI-FOOD SYSTEM INNOVATION: REFRAMING THE CONVERSATION

Workshop Report

27-29 June 2017, International Crops Research Institute for the Semi-Arid Tropics (ICRISTAT)
Hyderabad, India



Independent
Science and
Partnership
Council



The Commonwealth Scientific and Industrial Research Organisation (CSIRO) Agriculture and Food and the CGIAR Independent Science and Partnership Council (ISPC) Secretariat are collaborating to explore the nature of agri-food systems innovation and impact. This report is a record of the outcomes from a workshop held from 27 to 29 June at ICRISAT, Hyderabad, India.

CSIRO and the ISPC gratefully acknowledge the support from ICRISAT in hosting of the workshop at their headquarters in Patancheru, Hyderabad, India.

Citation

CSIRO & CGIAR ISPC Secretariat (2017) Agri-food System Innovation: Resetting the Conversation. Workshop Report. CSIRO, Canberra, Australia and CGIAR ISPC Secretariat, Rome, Italy

Background

The endorsement of the Sustainable Development Goals (SDGs), not only provides strategic direction to global development efforts for the coming decennia, but it also clearly couches this in transformation terms. Central to matching this ambition will be the manner in which the world and its nations deal with the unprecedented set of challenges and opportunities that agri-food systems face.

There is broad recognition that research and the need to accelerate innovation are at the heart of the path ahead in lifting agri-food-systems and the world to a new and sustainable level of prosperity. The appreciation, however, that this change relates to both agricultural production and the institutions and value systems that govern agri-food systems is not ubiquitous. Bringing in new framings, perspectives, analysis and evidence on innovation in agri-food systems will thus be essential to changing the dominant narrative of change.

About the Agri-food systems innovation and partnership initiative

CSIRO and the CGIAR ISPC Secretariat are collaborating to explore the nature of agri-food system innovation, including the role of research and how different innovation processes lead to impact. The initiative aims to support a wider collaborative process to assist in the development and application of explanatory principles, guidance, and tools, to improve the impact effectiveness of investments in agri-food system innovation.

To date, the initiative has produced a range of different outputs designed to support a dialogue that explores the opportunities and challenges in changing the meta-narrative on agri-food system innovation, so that new pathways towards a transformation agenda may be advanced. These outputs include guidance documents, case studies and discussion papers, and an ongoing dialogue with key stakeholders (see Box 1).

Box 1: ISPC/CSIRO Agri-food systems innovation and partnership initiative – outputs to date

- 1. Strategic study of good practice in AR4D partnership:** This study develops a framework of Partnership and Innovation Modes to assist the CGIAR in embedding its work within the wider architecture of partnership, platforms, and networks that will be required to tackle global scale challenges.
- 2. Synopsis: Towards a framework for unlocking transformative agricultural innovation:** This discussion paper proposes a framework to better understand the relationship between different innovation configurations (partnerships, networks, and practices) and impact.
- 3. ‘Proof of concept’ meeting:** In July 2016, a small group of key agricultural research stakeholders participated in a round table meeting to discuss the principles outlined in the Synopsis paper. The meeting identified the need to expand the database of case studies to further test the assumptions and hypotheses described in the draft framework for typologies of innovation modes.
- 4. ‘Pathways to impact’ meeting:** In December 2016, approximately 30 senior stakeholders from the Australian and International agricultural research community (including Donors, the Private Sector, & Research Organisations) met in Canberra, Australia, to initiate a dialogue about agri-food system innovation and impact. This meeting identified priority activities to drive the debate on resetting the conversation and key system lock-ins preventing transformational change.
- 5. Case studies:** Approximately 25 case studies have been developed and analysed using a template developed Agri-food systems innovation pathways case study initiative (Annex 1).
- 6. Reframing the conversation:** A discussion note, which proposes the core elements of a narrative of agri-food systems transformation (Annex 2).
- 7. Funding for transformational change:** A discussion note explores some of the adjustments in funding modalities that could more effectively incentivize and enable research institutions to work in ways that contribute to transformational change (Annex 3).

About this report

This workshop report is a summary record from the second workshop convened by the ISPC/CSIRO Agri-food systems innovation and partnership initiative, and held from 27 to 29 June at ICRISAT in Hyderabad, India (Annex 4). The report attempts to capture, in brief, the deliberations of the participants (Annex 5), including key outcomes and follow-up actions to further the initiative's campaign and ongoing dialogue on the reframing of the common narrative on agri-food System Innovation.

About this Workshop

In response to the outcome of the first workshop held on 14 and 15 December 2016 in Canberra, Australia, the initiative continued its campaign along two tracks. Firstly, by building up its case studies of how innovation leads to impact at different scales, and secondly through the further exploration of LOCK-INS - practices, traditions, approaches, and policies that prevent changes to new directions and visions-, that were identified in the Canberra meeting. The case studies aim to illustrate how innovation really happens and to inform the overarching narrative of the change process. The thematic studies on LOCK-INS aim to change the frames of reference of the conversations around the topic that are currently stuck in dead-ends and blocking the emergence of other pathways and perspectives.

This workshop set out to continue the reframing of the conversation on agri-food system innovation through:

- The presentation and stress-testing of a proposed new, overarching narrative against the key propositions emerging from the campaigns' case studies;
- An in-depth reflection on the Research funding modalities LOCK-IN aimed to shape the scope and nature of the further research and analyses that the initiative should pursue in this realm; and
- The canvassing of stakeholder opinions on how best to accelerate the initiative's campaign to reframe the common narratives that inform strategic choices in agri-food system investment through the wider engagement of thought leaders and opinion makers.



Key workshop themes and take-away messages

The overarching themes of the workshop on the need to reframe the conversation on agri-food system innovation, the proposed core elements of a transformational change narrative, and research funding modalities towards transformational change, resonated broadly with the workshop. Albeit cognisant of remaining ambiguities, there was also acknowledgment that the initiative provides a potentially unique opportunity to contribute to the building a global agenda for transformational change.

Notwithstanding such broad endorsement, the workshop also identified a number of additional issues for consideration, inclusion, and additional emphasis, as the dialogue to co-construct and adjust the initiative's strategic direction continues:

- **Partnership:** Role of partnership / networks and in particular the central role of the private sector in the initiative needs further thought and articulation. Moreover, transformation means different things to different stakeholder groups. We need to be cognisant that different views of transformation can act as a barrier to engagement with other groups that may have another vision of what transformation means and looks like in their domain. The credibility and influence of the initiative will be dependent on its ability to effectively include its key stakeholders and recognise their aspirations.
- **Capacity:** Meaningful engagement in the transformation agenda requires the initiative to focus on the building of individual and institutional capacities and capabilities for change ;
- **Monitoring, Evaluation, and Learning:** Recognise that M&E and particularly continuous learning to identify challenges to, opportunities for, and measurement of systems' change, and to adapt and respond to systemic changes is fundamental to a new narrative. This includes the need to incorporate the learnings from transformational change in other sectors.
- **Language:** Broadening the dialogue to include additional stakeholder groups will also mean that the initiative needs to become adept at 'user-friendly' language, graphics, and media, to enhance the accessibility and understanding of its campaign.



Next steps

The key messages and themes arising from this workshop, combined with the initiative's ongoing activities, and the resources available to the ISPC/CSIRO partnership, have led to the identification of the following proposed priority tasks for the remainder of 2017:

Empirical evidence

- An assessment of the different types of investment in innovation. This study will explore the efficacy of different investment modalities (e.g. challenge funds; agri-business incubators; levy-funded research; crowdsourcing) in supporting different modes of innovation (incremental, radical, and transformational) in agriculture and other sectors;
- Further exploration of the roles of different actors (public, private sector) in supporting the long-term agenda of transformational innovation.
- A study on the research evaluation LOCK-IN, including, but not limited to, the landscape of the different actors and their roles, and an assessment of monitoring and learning tools and methodologies in supporting the different modes of innovation (incremental, radical, and transformational).

Expanding the dialogue: Towards a 'Thinking movement'

- Presentation of the results of the initiative's recent studies and workshops and their implications for the CGIAR and the ISPC work program at the 16th ISPC Council meeting in September 2018;
- Facilitate a Roundtable on Agri-food system innovation at the CIAT@50 meeting in November 2017; and
- Organize a special session on Agri-food system innovation at the FAO Global Symposium on Family farming and agricultural innovation in February 2018.

Narrative and case studies

- Consolidation and finalization of existing case study analyses and write ups; and
- Continued development of a new agri-food systems innovation / transformational change narrative.

As we continue to move forward in our campaign to reframe the conversation on agri-food systems innovation, we look forward to the continued engagement and suggestions from workshop participants and the broader community of interest, on both the above listed and additional activities to be considered under the initiative.



What we discussed

Agri-food systems innovation: Changing the narrative

Following a brief introduction, Andrew Hall kicked off the workshop with a “rallying cry to change the common narrative on agri-food system innovation. The presentation proposed that, despite evidence that innovation is a systemic, messy, and long-term process, with complex unpredictable cause-effect relationships that operate across scales, it is the view of innovation as a predictable process, with simple-cause effect relationships that persists and continues to provide the framing for the way development stakeholders engage with the transformation of agri-food systems. A reframed change narrative would facilitate research organization to find a new modus operandi, help set more realistic expectations, and help unlock new course of action aligned to global development ambitions.

He next described the signals that reinforce and maintain lock-ins to incremental innovation (Box 2), and the core elements of a transformational change narrative (Box 3) to catalyse a new conversation about how development stakeholders including research agencies engage in the multiple pathways to transformational change. The presentation also emphasised that a narrative shift requires additional evidence and coalition building, and was concluded by asking if the proposed narrative is in line with experiences and how it might be propagated.

The discussion following the presentation highlighted the following main issues:

- Need to deliver a new agri-food system narrative that builds on the useful aspects of the current narrative, but that resets assumptions and expectations, recognises multiple pathways, incorporates critical assessment and learning in the transformational process, and that leverages ongoing change processes in the best possible manner;
- Public investment needs to go beyond solving market failures only, and also be directed towards rectifying system failures;
- Tracking system change needs systems measures – not just # of farmers – and requires the building of bespoke MEL capabilities, with the emphasis on ‘L’;
- Identify the appropriate language and terminology to open constructive conversations with key stakeholders and gatekeepers

Box 2: Incremental innovation LOCK-INS

- **Funding models:** Short term, unrealistic impact expectations, silos, leverage of public funding, governance
- **Evaluation traditions and KPIs:** Historical performance measures and performance framing, weak learning orientation.
- **Demand led research and innovation:** Short term quick wins vs long term. Farmer centric vs agri-food system centric
- **Path dependency of legacy research:** Out of step with rapidly evolving agri-food systems trends
- **Patterns of capability and skills:** Historical origins, takes time to change
- **Rusted on partnerships:** What worked well in the past might not be fit for the future
- **Vision, leadership and policy coherence**

Box 3: Proposed core elements of a transformational change narrative

- Setting the scene: Multi level agri-food systems
- Resetting assumptions and expectations
- Multiple pathways
- Effective practices and processes
- Investing in future science and innovation
- Understanding and tracking success

For a copy of the presentation, please use the following link:

https://www.dropbox.com/s/ukc3b6j9hip8whw/Presentation_Reframing%20the%20conversation.pdf?dl=0

Case studies

Jeroen Dijkman then led a session around the evidence base the initiative has continued to develop to shape the proposed narrative by continuing to build up its database of case studies on how innovation leads to impact at different scales. In total 24 case studies and case study summaries have been developed by CSIRO, the CGIAR ISPC Secretariat and other members of the community including CIMMYT, Crops for the Future, AgResearch NZ, STEPRI and IRMA to name a few.

At the workshop, highlights from six case studies by members of the community were presented to stimulate discussion and identify central propositions and lessons learnt. The following is a brief overview of these case studies:

Drought Tolerant Maize (B.M. Prasanna, CIMMYT)

- The role of continued investment in a technology development;
- Fundamental importance of multi-stakeholder partnership;
- Market liberalisation was key.

System of Rice Intensification (Shambu Prasad, Institute of Rural Management, Anand (IRMA))

- Spirit of experimentation and engaging others in this;
- Same technology, different location → solve a different problem;
- Open-source technology allowed non-research community to experiment;
- Flexible research funding from WWF was helpful;
- There is an untold story of networks and conversations.

Apple New Zealand (James Turner, Agresearch New Zealand)

- Effective partnership formed because of a crisis;
- Important to test inventions in a 'real world' scenario;
- Which mechanisms transfer lessons most effectively?

Zero Tillage Wheat (Alwin Keil, CIMMYT)

- Research was better in 2nd phase, when it was interdisciplinary, had a ToC;
- Focussing on key partners and deepening the relationships, improved outputs;
- Partnership skills and capabilities require careful building.

Soybean Agribusiness Clusters (Charity Osei Amponsah, STEPRI)

- Regular review, reflection, learning, adjustments and flexibility allowed the project to correct course and improve its focus and impact;

Male Prawns (Giva Kuppusamy, Crops for the Future)

- Importance of considering cultural sensitivities;
- Demand-led research was important;
- Critical to introduce a technology that can be easily adopted.

For copies of the 24 case studies and case study summaries, please use the following link:

https://www.dropbox.com/sh/dnndg9r3jerle8f/AADGPQ_z9Fns00ou5528DQJFa?dl=0

"The soybeans agribusiness cluster project learnt from regular reviews, reflection, adjustments and by being flexible"

**Charity Osei-Amponsah,
STEPRI**

Case studies central propositions and the Meta-Narrative working groups

These presentations were then followed by working group discussions on the central propositions and how these related to the proposed concepts in the meta-narrative. The experiences and lessons learned from the contributed case studies, were next used in working groups to discuss and help test and validate the propositions central to the initiative's proposed core elements of an agri-food system transformation narrative.

The following main issues that require further emphasis in the evolving narrative were highlighted:

Contributed case study lessons

- Mostly traditional, incremental change stories;
- Assumptions about the primacy of R&D in change: Information/knowledge is one put into the change process only;
- Crisis is a driver, but also an opportunity;
- Centrality of networks and partnership;
- Different time frames for transformational change.

What conditions facilitate emergent change processes?

- Market demand that inspires private/public investment of time and resources;
- Understanding the drivers of change;
- Strong, adaptive processes and clear plans/business models
- Strong existing research and science that can be mobilised responsively;
- Adaptive capacity; regulations/access to capital are external factors;
- Capacity and leadership - Equitable ability to adopt and adapt.

Capacity and capabilities

- Transformation process 'measurement' needs to reflect different interventions;
- Need to work with private sector to create transformational change
- Learning from failures and identifying unintended consequences is important, but we cannot predict unintended consequences
- There are trade-offs between transformational impacts (social, economic, environmental);
- Build capacity across partners - Need strategic partnerships with ownership from the start: Transform institutional relationships;
- Learn from innovation outside the R&D establishment.

Exploring LOCK-INS: Funding for transformational research

On day two of the workshop, Peter Matlon shared his perspectives on the LOCK-INS created by donor funding modalities. He selected a few elements of transformational change (see box 4), contrasted against donor practices, outlined recommended changes to funding modalities and donor practices, and suggested that the initiative should establish a donor panel as a next step. He ended his presentation with a number of questions to the workshop participants, including:

- Are some donors more effective than others in contributing to real transformation? How, why?
- What are the constraints that limit donors from "doing the right thing"? Can these be changed?
- Do other development sectors (e.g. health) suffer from the same constraints? What can we learn?
- Can the particular constraints in agricultural assistance be mitigated? How?
- Do the next steps make sense? How can they be implemented?

Box 4: Proposed core elements of transformational change

- **Long term:** Changes generally occur over an extended time frame
- **Dynamic, Emergent:** A need for constant adjustment both strategically and tactically
- **Non-Linearity, uncertainty:** change is difficult to predict
- **Multi-dimensional:** Change is often at multi-levels and multiple dimensions
- **Multi-sectoral, Multi-disciplinary:** Capacity is required to work across sectoral and disciplinary boundaries
- **Local ownership, Private sector engagement:** Local ownership by key players is critically important
- **Local capacities:** Must be empowered and built to manage risks more effectively and to own longer term dynamic programs

For a copy of the presentation, please use the following link:

https://www.dropbox.com/s/6lmsy5zc7yk3gj2/Presentation_Transformational%20research-funding%20implications.pdf?dl=0

Research funding modalities - Panel Discussion

Building on Peter's presentation, a panel consisting of senior research managers and donors responded to the central themes and propositions outlined in Peter's discussion paper and presentation from their perspectives.

The panel included Nighisty Ghezae, (IFS and ISPC); Shambu Prasad, (Institute of Rural Management, Anand; Peter Carberry (ICRISAT); Tim Lester (CRRDC); May Guri Saethre (IITA) reflected on Peter Matlon's presentation.

The key points raised by the panel members raised included:

- Traditional funding frameworks do not align with transformational research and science;
- Align AR4D with national policy dialogue is critical to align and understand expectations;
- Need to identify innovative research methods and innovative researchers;
- MEL should be programme/project specific;
- CGIAR Centres need to change and take responsibility too: build the capacity for change;
- Involve the private sector and non-traditional donors/partners

"IDRC adopts a portfolio approach to projects, which allows us to focus on short-term wins and longer-term transformational results"
Kevin Tiessen, IDRC

Annex 6: Nighisty Ghezae's panel remarks

Working group discussions on Lock-ins

Building on Peter's presentation and the points raised by the panel, delegates broke into two groups to explore what is needed to unlock two key lock-in that have been raised throughout the two days; funding modalities and evaluation. Specifically delegates were asked to discuss:

1. What additional empirical evidence that needs to be collected and the hypotheses that need further testing in respect of research funding modalities? and
2. What shape research evaluation needs to take to encourage transformational innovation?

"We are all struggling with the same issues and we should think about how to make our experiences and lessons learned accessible globally"
James Turner, AgResearch NZ

The following highlights capture the key points from these two discussions:

Research funding modalities: what further empirical evidence do we need to collect and which hypotheses need further testing?

- Need to explore further the specific impact of different funding modalities;
- Dialogue with NARES – what are the priorities: avoid duplication
- Funding related LOCK-INS increased through the reduction of funds: Small donors have walked away; Bilateral donors look for PPPs; Donor interest in Africa >> South Asia; National government funding has been reduced:
- The research that is needed: Identify the translational benefits from the adoption of technology; Understanding the respective roles of different actors in the different funding modalities; Identify critical elements of transformation and the measurable tools for donors e.g. capacity for diagnosis; Forecasting research for learning

What would research evaluation look like if it is to encourage transformational innovation?

- More than just outputs – also looking at systems, particularly downstream; Evidence of holistic-level understanding of systems context; Evidence that learning is happening – demonstration of adjustment in response to evidence;
- Need both quantitative and qualitative measures – not just peer reviewed papers; Upstream policy partnerships; The indicators that are chosen will drive behaviour; Evaluating methodologies can be constraining: Accounting-driven, locked down log frames
- There is a need for agreed processes, structures, opportunities and trust; Constant, continuous processes; Need to engage internal resources to support organisational learning.

Expanding the conversation, continuing the campaign

During the final afternoon of the workshop, the groups discussed how to expand the conversation beyond the group of delegates. This session brainstormed on who should be engaged, how they should be engaged, and what we need to ask them, or research further. The key issues raised during these discussions are listed below:

Who isn't represented? Clearly the list of who isn't currently represented in the discussions is much longer than who is. Whilst it is probably not useful to try and list all, it should be clear that the credibility and influence of the initiative will be dependent on its ability to engage its 'natural allies', thought leaders, and to effectively include its key stakeholders and recognise their aspirations.

How to engage? Strategic engagement through close-knit exploratory meetings and by seeking connections to existing networks and platforms (Global Donor Platform; Global Forum for Agriculture Research; Existing national multi-stakeholder platforms), supported by key knowledge products

What else do we need to know to expand the conversation? How are we set up today compared to before, and what can we learn from our history? E.g. shift to RRA, participatory research: How were these embedded in organizations? What can we learn from transformational change in other sectors?; What are the diverse views of transformational change (farmers, donors, politicians)? What questions are others asking about TC?: Need for different conversation with different actors; How do we connect the theory of transformational change to practice and back to theory?;

Workshop Wrap up

During the final session of the workshop a number of delegates shared their reflections and perspectives on the workshop and what it means to them:

Nighisty Ghezze shared her reflections on the journey and how times we have moments of clarity and at other time we may feel confused with new information, but it is important we continue to progress on this important topic.

Jonathan Wadsworth, dialled in from Washington DC to express his support for, and the importance of, what he called, the "thinking movement". He also shared some insights from his experiences at the World Bank. He highlighted the Bank's changing perception of risk, and their new approach of aiming big and learning. This change has been precipitated by the recognition that addressing the key Global challenges requires urgent change. He concluded by suggesting that the broad conversations in the workshop should be complemented with a series of small 'in practice' conversations.

'This subject is on all agendas... This workshop has spurred me to initiate two new initiatives at ICRISAT'
Peter Carberry, ICRISAT

Peter Matlon's workshop reflections included a call to keep moving forward with engaging key stakeholders: "We don't want paralysis by analysis. We need to try and engage early in constructive conversations with people like the donors. Business as usual is no longer an option. So let's make sure that

the changes that are required to ensure we address today's and tomorrow's challenges are made as soon as possible.”

Peter Carberry, thanked everyone for coming to ICRISAT and proposed that the initiative can, and should be progressed by everyone. He challenged the room with the question “*What can you do about it?*”. He also challenged CSIRO and the ISPC to think about how to engage people beyond the current community of interest, and reinforced the need to find a language that others can relate to and understand.

Jeroen Dijkman thanked everyone for their dedication, time, and contribution to the initiative. He indicated that it was good to see that the issues raised resonated, albeit maybe in different ways, with everyone in the workshop. It was also gratifying to note that people not only see the need to change the overarching narrative and conditions in which research takes place, but also the need to change themselves and their organizations. He expressed the teams desire to create greater credibility around the initiative by effectively engaging other stakeholders and their aspirations, and to continue to keep everyone engaged through inclusive dialogues. In line with this, Jeroen also announced a number of upcoming events at which the initiative and changing the narrative of agri-food system transformation will be high on the agenda, including the CIAT@50 meeting in November 2017, and FAOs Global Symposium on Agricultural Innovation in February 2018.





Annex1: Case study template Agri-food systems innovation pathways

Preamble.

CSIRO and the Secretariat of the Independent Science and Partnership Council of the CGIAR are collaborating to investigate the nature of agri-food systems innovation pathways and to explore how transformational innovation pathways can be enabled. Part of this work involves the development of a data base of case studies. The purpose of these studies is to develop a multi-dimensional account of innovation that reveals the scope of change processes at play, how these unfold over time, and their relationship to the scale and nature of impact achieved. Elements of this narrative may include:

- Initiating events and key turning points during the innovation process
- The role of research and technology in the wider process of change.
- The range of players involved in the innovation process and their changing roles over time.
- Alliances and partnerships that were pivotal in the innovation process.
- Institutional arrangements (markets, states, corporate hierarchies, networks, associations, communities etc) and the certification, regulatory, pricing and other policy measures that have formed part of the innovation.
- The nature of the innovation process, for example, the commercialization of a (public) research technology by the private sector; the public policy, regulatory regimes, or governance arrangements that stimulated / facilitated technological and practice changes; market disruptions arising from new business models and or changing societal demands and values.
- Evidence from independent / objective evaluations and impact assessment about current and future scale and nature of impacts

Case study template

Agri-food systems innovation pathways

Annotated Case study template:

1. SUMMARY

Highlight the key points to alert readers to what to expect in the case study: The nature of the innovation being discussed, the key processes at play and the headline impacts.

2. CHALLENGE / OPPORTUNITY

Outline the problem that the innovation discussed is providing a solution to, and / or the scope of the opportunity(ies) that the innovation discussed is unlocking.

INNOVATION

A brief description of the change that has taken place to create social, economic and / or environmental value. For example:

- the introduction and spread of a nutritionally enhanced food product in the market;
- the development of public-private sector research and development consortium that that supplies farmers with seeds adapted to changing environmental and market conditions;
- the development of a policy regime that provides incentives to multiple stakeholders to collaborate in the development and implementation of environmentally sensitive technologies and practices.
- Participatory technology development with farmers and the subsequent spread of new farming practices.
- The public or private promotion of new technology and the cluster of policy and price incentives and regime changes that enabled the use and spread of the technology.

This section may need to give a brief description of the technological dimension of the innovation (for example the development of new seed varieties), but it should also describe the allied institutional, market and policy change dimension that have been involved the deployment and use of the technology.

Note: the description of a technological breakthrough or research finding does not constitute an innovation: innovation is the application and use of technology, knowledge and ideas for social, economic and or environmental benefit



Case study template

Agri-food systems innovation pathways

INNOVATION PATHWAY

This section is the core of the case study. Its purpose is to describe in detail the chain of events, players and processes in the innovation process. A time line of key events should be presented. It maybe useful to break the narrative down into different phase that may be punctuated by key events or turning points. These phases can then be used to explain the role of players, partners and alliances and the way these contributed to creating the opportunities and condition for the innovation to take place. Early phases may consist of initiating or foundational activities. Later phases might involve the expansion of pilots or the spread of the innovation through the market or (farming) communities. The narrative should also describe any challenges or dead ends that were encountered along the way, particularly if the realization of the limitations what was being done lead to new direction or approaches. The narrative should not be purely about research and technology or the findings of different research projects. However, it is useful to describe the role of research in different phases, if appropriate. For example, early phases might involve a technological break through (although certainly not always).

IMPACT EVIDENCE

Quantified independent / objective evidence of impact from evaluations and impact studies with source of impact data or impact estimates cited. This should document impact that has actually occurred / been established to date. Impact projections can also be presented but these need to accompany by the assumptions / theory of change that underpin these assumptions.

CONSEQUENCES

This section seeks to document the consequences or follow-on effects from the innovation described. For example; new partnerships or capabilities developed during the innovation might have been used to tackle other challenges. The introduction of a new food product and might have lead to the development of a new market segment, stimulating private investment and innovation to serve this new market. Transformation of markets, societal values and attendant polices might have created the conditions for the development of new or the deployment of existing technology through both incremental and radical modes of innovation.



Case study template

Agri-food systems innovation pathways

PATTERNS OF INNOVATION AND IMPACT PROCESSES TABLE

This table captures the key Innovation and Impact process features of the case study. Entries to the table need to be brief and supported by the narrative of the case stud. It can also be used as a checklist when writing the case study to make sure that the main themes have been covered in the narrative.

Initiator	
Critical features	
Role of research	
Operational alliances	
Strategic alignment of stakeholders at sector or national level	
Solution, product, or system innovation	
Scope of impact (and metrics)	

REFERENCES AND FURTHER READING.



Annex 2: Workshop Program

Agri-food System innovation Workshop: Reframing the Conversation

June, 27-29 2017; ICRISAT Hyderabad, India

Workshop background

The workshop forms part of a wider on-going collaboration between the Commonwealth Scientific and Industrial Research Organisation (CSIRO) and the Secretariat of the Independent Science and Partnership and Council (ISPC) of the CGIAR, to explore the nature of agri-food system innovation, the role of research within this, and the way different types of innovation processes lead to impact. The initiative aims to support a wider collaborative process to assist in the development and application of explanatory principles, guidance, and tools to improve the impact effectiveness of investments in agri-food system innovation.

Workshop objectives

Following the key outcomes from a workshop held on the 14-15 December 2016 in Canberra, Australia, the initiative has continued its campaign along two tracks: The first is building up case studies of how innovation leads to impact at different scales, the second a set of thematic studies on different LOCK-INS. The case studies are to illustrate how innovation really happens and to inform the overarching narrative of the change process. The thematic studies on LOCK-INS aim to change the frames of reference of the conversations around the topic that are currently stuck in dead ends and blocking the emergence of other pathways and perspectives.

The workshop, will present a nascent White paper that resets the meta-narrative on Agri-food System Innovation, and subsequently stress-test this reframing against the key propositions emerging from the campaigns case studies. In addition, an in-depth reflection on some of the major LOCK-INS will target to shape the scope and nature of the further research and analyses that the initiative should pursue in this realm. Finally, the development of a format to solicit diverse perspective on the White paper and their subsequent documentation in a compendium publication, aims to escalate the initiative's campaign to reframe the common narratives that inform strategic choices in agri-food system investment through the wider engagement of Global thought leaders and opinion makers.

Workshop Location

Venue: 212 CF Bentley Conference Centre (*See map below*)

International Crops Research Institute for the Semi-Arid Tropics, Patancheru, Hyderabad, Telangana, India

Contact details

For more information about the programme please contact:

Jennifer Kelly, CSIRO, Jennifer.Kelly@csiro.au

For accommodation bookings, airport transfers and visa letters please contact:

Ms Nalini, ICRISAT, J.Nalini@CGIAR.ORG or Ms Ragini Rayalla, ICRISAT R.Ragini@cgiar.org

Tentative Agenda

Arrival: **Tuesday 27 June 2017**

19:00-20:30	Informal welcome dinner Hosted by Peter Carberry (ICRISAT Deputy Director General – Research) at Peter’s house <i>(For directions see attached map)</i>
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Workshop Day 1: **Wednesday 28 June 2017**

Time	Activity	Location
8:30	Registration	Building 212
8:45	Opening Remarks <i>By Nighisty Ghezze (ISF & ISPC), Peter Carberry (ICRISAT) & Jenny Costelloe (Collective17)</i>	CF Bentley Conference Centre Building 212
09:15	Reframing the Agri-food system innovation narrative <i>By Andy Hall</i>	CF Bentley Conference Centre Building 212
10:00	Break (Morning tea & Group Photo)	
10:30	Agri-food System innovation – Introducing the Case studies <i>By Jeroen Dijkman</i> Case Study Presentations – Insights <i>By B.M. Prasana (CIMMYT from Nairobi), Shambu Prasad (Anand), James Turner (AgResearch NZ), Alwin Kiel (CYMMT), Charity Osei-Amponsah (STEPRI), & Giva Kuppusamy (CFF)</i> Discussion - What do the case studies tell us	CF Bentley Conference Centre Building 212
12:30	Lunch	
13:00	Working Group discussions - White paper central propositions: Covenants and cracks	iHub
15:00	Break (Afternoon tea)	
15:30	Feedback from Working Group discussions.	iHub
16:15	Wrap up, and introduction to Day 2	iHub
16:30	Day 1 close	
19:00	Workshop Dinner	Courtyard

Workshop Day 2: **Thursday 29 June 2017**

8:45	Recap of Day 1 and Outline of Day 2	
9:00	LOCK-IN: Research funding modalities <i>By Peter Matlon (Cornell University)</i>	CF Bentley Conference Centre Building 212
10:00	Break (Morning tea)	
10:30	Panel discussion – LOCK-IN: Research funding modalities <i>Nighisty Ghezae, (IFS & ISPC); Shambu Prasad Chebrolu, (IRural Management, Anand; Peter Carberry (ICRISAT); Tim Lester (CRRDC); May Guri Saethre (IITA); & Peter Matlon (Cornell University).</i>	CF Bentley Conference Centre Building 212
11:00	Working Group discussions on LOCK-INS Presentations <i>Working groups feedback</i>	Meeting Rooms Building 212 CF Bentley Conference Centre Building 212
12:30	Lunch	
13:30	Working Group discussions expanding the conversation & continuing the campaign	ihub
15:00	Break (Afternoon tea)	
15:30	Workshop wrap-up & next steps	Conference Room Building 212
16:30	Workshop close	

Annex 3: Changing the narrative of agri-food systems transformation

Andy Hall, CSIRO & Jeroen Dijkman, ISPC Secretariat

June 2017

This note proposes the core elements of a narrative of agri-food systems transformation. The purpose of this narrative is to catalyse a new conversation about how development stakeholders, including research agencies, engage in transformational changes process. This is a response not only to a global development agenda articulated in transformation terms (the SDGs), but also because transformation is an increasingly common feature and realistic proposition in the development context of the 21st century.

Why change the narrative?

A review of cases on historical agri-food innovation processes has revealed many path dependencies in the practices and organizational policies of development stakeholders and in national policy making. While this may have worked well in the past, and despite the best of intentions, these path dependencies have locked many development stakeholders into privileging action and practice that lead to incremental innovation and change processes. This is not to criticize the actions or practices of development stakeholders *per se*. Neither is the intention to undervalue incremental change processes. Rather, it is a critique of the meta or common narrative that provides the incentives and other signals that pattern those actions and practices at a time when transformational change has become an unavoidable fact of life.

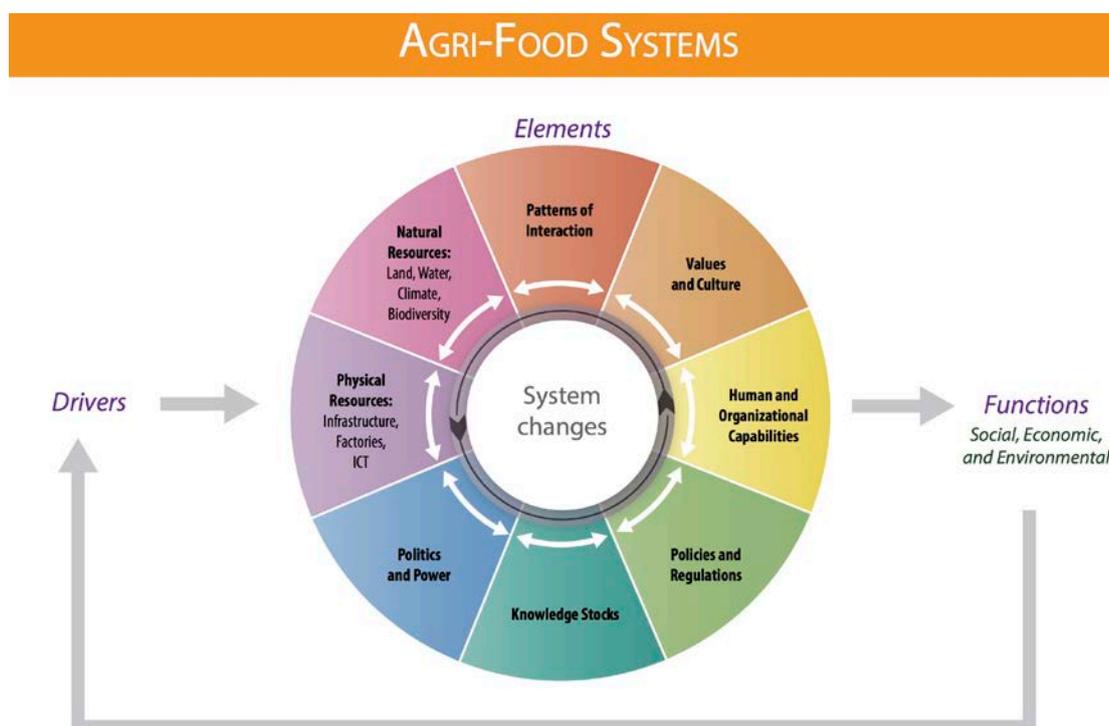
Currently the common narrative presents a view of innovation as a predictable process, with simple cause-effect relationships. There is abundant evidence that suggests that, to the contrary, innovation is a systemic, messy, and long term process, with complex unpredictable cause-effect relationships that operate across scales. However, it is the former more simple common narrative that persists and provides such a powerful and apparently unassailable framing for the way development stakeholders engage with the transformation of agri-food systems.

The tension this creates is particularly challenging for research organizations and their ambition to engage with, and contribute more effectively to the transformational change agenda. It is, however, not a research centric narrative that is required, but a wider transformational change narrative that allows research organization to find their proper place and *modus operandi* in the transformation change process. This would help set more realistic expectations and help unlock new courses of action aligned to global development ambitions.

What might be the core elements of a transformational change narrative?

Setting the scene. Transformation is about multi-level systems change.

Agri-food systems has already entered the lexicon of development stakeholders. This is, however, not just a linguistic sleight of hand to signal the wide scope of agriculture and food related activities, contexts and players. Rather it recognises that collectively these operate as dynamic, complex systems (figure 1 and box 1) that operate at farm to societal scales. Transformation involves changes in these systems as much as it does changes in component parts. It involves changes in values, networks, and behaviour as well as technology, markets, policy responses, and drivers. The move towards locally produced food, for example, reflects a societal change that is reflected and supported by policy and market changes and technological responses and support networks.



Box 1. Agri-food system definition

"an interconnected web of activities, resources and people that extends across all domains involved in providing human nourishment and sustaining health, including production, processing, packaging, distribution, marketing, consumption and disposal of food. The organization of agri-food systems reflects and responds to social, cultural, political, economic, health and environmental conditions and can be identified at multiple scales, from a household kitchen to a city, county, state or nation." Grubinger et al., 2010.

Resetting assumptions and expectations

- Unpredictability of innovation and change processes.
- Few simple cause-effect relationships
- May take many years

- Unexpected outcomes
- Multi-level, multi scale process
- Being realistic about roles of different actors in system change and matching expectations to these roles. No organization can do everything.

Multiple pathways

- Recognizing and engaging with different sources and process of change.
- Mission orientated
- Open source innovation communities
- Civil society movements
- Business-led development coalitions
- “business as usual” where it works

Effective practices and processes

- Fostering strategic alignment of public, private and civil society interest around transformation
- Working with emerging opportunities and dynamics in markets, policy and societal shifts
- Partnership architectures
- Funding modalities
- Governance
- Critical assessment / learning

Investing in future science and innovation

- Addressing market failures in research
- But also addressing systems failures in innovation
- Building new capability in both science and innovation
- Establishing new innovation trajectories
- Public or philanthropic roles

Understanding and tracking success

- Better definitions of what success looks like on the pathway to transformation
- Performance measures of stakeholders better aligned to the role they play in the transformation process
- Greater emphasis on the capacity of agri-food systems to respond to unpredictable futures

Annex 4: Funding for transformational research

Peter J Matlon, Cornell University

June 2017

The history of technological advances in agriculture includes periods of relatively slow incremental growth interrupted periodically by more radical, stepwise transformational changes. Examples of the latter include the emergence of fertilizer-hybrid seed production systems that swept through temperate agriculture beginning nearly 100 years ago; and the introduction of high yielding seed-fertilizer-irrigation packages of the green revolution which produced a step-wise acceleration in cereal yields in some tropical areas, primarily in Asia, beginning more than 60 years ago. The latter in particular was the result of major strategic investments in innovation systems made initially by the Rockefeller and Ford Foundations to avert what was then seen as an impending global food crisis.

Following each step change, progress continued to build on the new research paradigms but in more incremental fashion. New seed technologies and agronomic packages were continuously developed to generate positive but more gradual yield increments. And maintenance breeding assured that yield gains were protected from the threats of new pests and diseases.

We now appear to be entering a period when yet another step change in agricultural technology is urgently needed to address major new problems. In the years since the green revolution the rates of yield increase for many of the world's major crops have begun to decline. There is now renewed concern with the capacity to sustainably feed a global population expected to exceed 10 billion people before the end of this century. At the same time, growing demand for livestock products and other change in food preferences in emerging market countries in particular are changing production patterns and placing increasing pressure on the declining land and water resources. All this while climate change is threatening the viability of existing agricultural practices in many regions.

Although continued incremental improvements in technology and productivity are necessary (e.g. through maintenance breeding), they may not be sufficient to address the rapid, profound and complex challenges now taking place in global agri-food systems. These challenges demand new responses from innovation systems, responses that lay the basis for, and help enable, transformational change. Research models and approaches that addressed earlier generations of problems by generating a stream of relatively reliable and predictable incremental improvements are increasingly unable to generate solutions to the qualitatively new and uncertain challenges emerging at both global and local scales. Innovation systems themselves must be transformed to respond to this new reality, and this includes the modalities used to fund innovation. The limited ambitions, risk aversion, chronic impatience and discontinuities that characterize many donor organizations can impede, or even block, truly transformational research.

This brief note explores some of the adjustments in funding modalities that could more effectively incentivize and enable research institutions to work in ways that contribute to transformational change. The first section sets out some of the core elements that distinguish most types of transformational change. Attributes of many donor organizations that may conflict with transformational processes are set out as hypotheses in section two. Section three suggests a number of adaptations that donor organizations might consider if they wish to contribute more effectively to a transformation agenda. And section four proposes a number of next steps that might be taken to move this agenda item forward.

Core Elements of Transformational Change

Most cases of research-induced transformation share a common set of attributes which are briefly characterised below.

Long-term. Changes of a transformational nature generally occur over an extended time frame, and once they are put in motion they are difficult to reverse. While transformation can be catalyzed by a single factor or event, say a new technology or single, large policy reform, a more common pattern is a series of interactive “radical” changes that synergistically create opportunities - or an urgent need - for large discontinuous adjustments. This discontinuity occurs when a tipping point is reached in which forces for change overcome the inertia created by a complex of factors (social, institutional, technical, political, etc.).

Dynamic, Emergent. As a result, most transformations are better described as “processes” rather than as the outcome of discreet projects. The dynamic nature of transformational processes means that there is a need for constant adjustments at both strategic and tactical levels to take into account the emergence of new factors, many of which may not have been originally anticipated or planned for. This requires constant adaptation informed by real-time learning.

Non-Linearity, Uncertainty. Because of their dynamic nature, transformational changes are difficult to predict and do not follow easily formulated linear trajectories. With changes occurring at multiple levels, transformative changes can generate feed-back loops that create new tipping points and accelerate elements in the process. They can also create new obstacles (and opportunities) that push the process into new directions. The non-deterministic nature of most transformations creates uncertainty, risks, and the likelihood of unintended consequences and second-generation problems (which can be technical, environmental, distributional, social, political, etc. in nature). Capturing such transformational change in deterministic log-frames, results frames and Theories of Change is difficult at best, and can be fatally constraining at worst. This isn’t to say that such planning devices can’t be useful. But they are most valuable to clarify long-term goals and to organize one’s initial thinking in how to achieve those goals. They then provide a baseline from which informed program adjustments can be made at both strategic and tactical levels based on progress in implementation, and the emergence of new problems and new opportunities.

Multi-Dimensional. As implied above, transformations often generate change at multiple levels and in multiple dimensions. The main “vector(s)” of change can catalyze associated and interacting shifts outside of the original program boundaries. Such shifts can generate new opportunities, but also new problems that can threaten and constrain the overall change process. In many cases, market

forces will create incentives for new investments to exploit emergent opportunities. But in cases of market failure, guided by real time learning, it may be necessary for the public sector to formulate and direct new accompanying actions favoring technical, market, policy, environmental and institutional innovations to become force multipliers. The key point here is that new pieces must continuously emerge, either organically or purposefully, and then fit together.

Multi-Sectoral, Multi-Disciplinary. The complex and cross-cutting nature of most transformational change processes requires capacity to work across sectoral and disciplinary boundaries. It also requires a capacity to think in ways that go beyond conventional disciplinary traditions. Truly transformational change in science almost always generates heated push-back from traditional disciplinary schools of thought, as it can challenge long-held beliefs and vested interests. (See, for example, Thomas Kuhn's *The Structure of Scientific Revolutions*.) For this reason, it is essential to be open to – and to pro-actively open – new evidence-based debates and to contribute pro-actively to “informing the field” through both traditional and non-traditional channels.

Local Ownership, Private Sector Engagement. In order to generate political will, co-investment and momentum to overcome constraints, local ownership by key players can be critically important for transformational change. For this reason, stakeholder agency during both planning and implementation can be critical for success. This includes private sector ownership to achieve scale and sustainability, and to maintain political support. This can often mean reverse engineering the typical model of PPPs: that is, public goods should be used to support vibrant private sector actions rather only than vice versa.

Local Capacities. To ensure the necessary political support and co-investment to sustain and scale-up transformational change, it is important to ensure the capacities of local individuals and institutions, in both the public and private sectors. Local players represent the foundation for long-term transformation. Local leadership and institutions must be empowered to build and mature their internal capacities, to identify and manage risks more effectively, and to fully own and deliver long-term dynamic programs that are in their best interests.

Attributes of Many Donor Organizations

Several of these elements may conflict with core attributes of many donor organizations which are briefly, and somewhat stylistically, set out below. Based on the author's personal experience and observations, this note presents these attributes as hypotheses to be tested. Anecdotal evidence suggests that there is considerable variation in these how these attributes are manifest, both across and within the different types of donors – bi-lateral, multi-lateral, philanthropic foundations, etc. – with some organizations believed to be better positioned to support transformational change than others. These differences provide a basis to systematically test the hypotheses. And if the hypotheses prove to be correct, they may provide not only examples of good – and bad – practice, but also evidence that more effective and impactful donor assistance is possible.

Preference for Near-Term, Easily Measurable Results. Essentially all donor organizations report results of their investments to oversight bodies which are responsible to make or approve resource allocation and appropriation decisions (legislatures, parliaments, boards, etc.). Donor organizations

must provide evidence of impact in order to justify the allocations and thereby position themselves for future funding allocations. This puts priority on projects for which results can be relatively easily measured. And when, in addition, political or bureaucratic requirements stipulate that resources can only be committed for short periods – often only a single year – this further prioritizes projects which generate very near-term results. To give a sense of certainty to decision makers, this also leads to project proposals packaged with often unrealistic log-frames and over-quantified milestones, often defined on the basis of incremental change. Each of these factors mitigates against support to the longer-term and more uncertain investments that are the foundation of most transformational change processes.

Frequent Staff Turnover. Reinforcing the preference for short-term investments is the fact that in many donor agencies human resource policies call for frequent changes in program staff, particularly at country and regional offices. In some agencies, turnover rates for country assignments can be as low as two to three years. The lack of continuity greatly limits learning and the translation of lessons learned into strategic program adjustments. Moreover, lack of continuity provides few incentives for laying the ground work in support of long-term processes, and instead incentivizes the launching of new and often unrelated short-term project initiatives for which individual program officers can claim credit.

Weak ME&L Functions. The need to show early results in order to secure future funding can also compromise learning functions within donor agencies. Too often priority in monitoring and evaluation is placed on generating “good news” results that can be used to prove or demonstrate, rather than test, impact, and to “market” a project within the donor agency and oversight bodies. Favorable reports are also useful for career advancement at multiple levels within a mission or agency department. The result is that critically important strategic and tactical lessons that can be gleaned from dead-ends and outright failures are inadequately identified and analyzed, leading to breakdown in adaptive management practices that are essential when investing in transformational change processes.

Risk Aversion. Incentive structures in most donor agencies are also biased toward low-risk projects from which incremental gains are most assured. Projected returns to investment in less certain research and development activities that might be associated with greater risks, but also with greater potential returns, can be highly discounted to avoid jeopardizing future appropriations. Similarly, annual staff evaluation procedures in donor agencies reward easily measured short-term impacts further incentivizing investment in low-risk, incremental legacy projects.

Structural Program Silos. The organizational structures of some donor agencies can create nearly impregnable program silos which block the design and implementation of integrated multi-disciplinary and multi-sectoral initiatives. When investments in technology, markets, policies, capacity development, and governance reforms are directed out of separate agency units, the strategic integration that is needed to generate synergistic transformational change is lost. Even in relatively small teams of program officers who are notionally working in the same geographies and value chains, without strong leadership perverse organizational incentives can create centrifugal forces with the result that officers pursue their own strategic priorities and thereby miss (deliberately avoid?) opportunities to make mutually complementary investments with greater transformation potential.

Underinvestment in Capacity Development. Compared to earlier decades, there has been a significant reduction in aggregate investment in both institutional and individual capacity

development within agricultural R&D generally. Large scale, sustained investment in national and regional institutions is now a rarity, and individual capacity development efforts are most often included as minor line-items in related short-term projects. Moreover, political forces within many donor countries require that a disproportional budget allocation must be channeled to organizations within the donor countries themselves to provide training and advisory services – rather than to regional and national organizations – thereby losing the potential for multiplier effects and further institutional capacity development within recipient countries.

Limited Investment in Local Ownership. The Paris Principles, developed and endorsed by most donor agencies more than 10 years ago, were intended in part to rebalance the relationship between donor and recipient governments in ways that would create greater ownership by the latter. Although these Principles have been repeatedly reaffirmed in donor rhetoric, implementation has been uneven, and in most cases insufficient to provide a foundation for transformational change. It remains the norm for strategies and approaches to be developed in donor headquarters and (imperfectly) adapted to local national contexts. Many donors still give inadequate weight to national strategic priorities, such that political ownership and commitment within recipient countries is often inadequate to build momentum for long-term transformational processes.

Limited Donor Cooperation. Another of the Paris Principles was the call for donors to cooperate among themselves to ensure more coherent and consistent funding in support of national strategies. In practice, this remains more the exception than the rule. In many countries, there is grossly inadequate strategic coordination between donors to provide long-term funding for strategically complementary elements of a system-level transformation process. More frequently, one continues to see a balkanization of the landscape with individual donors providing support to different regions, sectors and activities in ways that fail to ensure system-level synergies.

Areas for Improvement in Donor Organizations

There is a range of adjustments that donors could consider in order to motivate and enable grantees to pursue a more transformational development agenda. These include both “internal” changes that involve how donors are structured and how they operate within their own agencies; and “external” changes that involve the types of investments they make, what they are trying to achieve and how they interact with recipients. Some of these actions are within the scope of donor agency policies and procedures that are more amenable to change. But other actions may be inhibited by political constraints imposed on donor organizations. For the latter in particular, second- and third-best solutions need to be explored.

Internal

1. Make longer-term funding commitments
2. Ensure greater continuity in staff assignments
3. Incentivize staff to work towards larger, systemic change

4. Encourage lateral, strategic thinking to identify new opportunities that build broader system-level change
5. Avoid siloed, stove-pipe thinking
6. Reward honest, insightful, real-time learning
7. Reward informed flexibility and adaptive management
8. Reconsider use of log-frame and related approaches
9. Incentivize risk-taking within a portfolio approach
10. Explore new modalities to work with and support the private sector
11. Work in multi-disciplinary and multi-sectoral teams
12. Combine experience, technical expertise and visionary strengths in team approaches.

External

13. Target long-term, multi-vector, integrated, systemic change in strategic planning and implementation
14. Make individual and institutional Capacity Development a core component of all programs
15. Align assistance to national and regional strategies, and promote a broader alignment between public policies, the private sector and civil society.
16. Empower local organizations during planning and implementation
17. Channel a greater share of resources to local institutions using “results not receipts” accountability
18. Improve cross-donor coordination, led by local entities
19. Use learning to “inform the field” and to shape the broader agenda of the development community.

Possible Next Steps

If this agenda item is to be pursued further, a first necessary step would be to generate more systematic evidence to test the hypotheses regarding the limitations to donor structures and processes that have been set out above. This might be done through a series of case studies, but that approach would probably be too demanding of both time and resources. A lighter, more rapid and probably more insightful approach might be to open a structured conversation with representative donors to get their direct input on a number of questions.

At the most general level, these questions might include: (1) How do donors view the concept of transformational change and its imperative in the current global agri-food system context? (2) To what extent is each hypothesis an accurate reflection of donor structures, processes and behavior? (3) What factors both within the donor agencies themselves and within their larger political context drive the hypothesized outcomes? (4) Which of these factors are amenable to changes that would enable more effective support to transformational innovation systems? (5) Which factors are fixed

due to inflexible legislative, bureaucratic and political constraints; and for these, what second- or third-best solutions should be explored?

To this end, it is proposed that a donor panel be formed to provide at least initial responses to the five framing questions above. The panel might begin by building on the results of this series of workshops to further refine the concept of transformational innovation as it is understood by donors themselves. They might also reach out to a wider set of donors, representative of different types of donor organizations, for substantive input to better define the concept and to assess the importance given to transformational change in the donor community more broadly.

This could be followed by assessing the feasibility of the actions proposed in this note, but also of other actions that donors might suggest to motivate and enable agricultural R&D actors to implement a more transformational innovation agenda. Feasibility would probably differ across different types of donor entities and across different governance structures. These distinctions, and a diagnosis of the differing constraining factors underlying them, would be important to determine the generalizability of the results. When inflexible organizational constraints are identified, second- and third-best adjustments in policies and procedures could be suggested from the perspectives of individual donors.

A final set of actions could be to develop a set of good practice funding principles that are more supportive of transformational innovation, and to formulate a strategy – and modified funding modalities – to be tested with selected donors.

Annex 5: Workshop participants

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Annex 6: Comments by Nighisty Ghezae (ISPC & IFS) on the Funding Modalities Lock-IN

What is the role of science in transformative change? What are the entry points for science?

- Developing solutions to the major societal challenges i.e. challenges to global food security and environmental sustainability posed by the predicted growth in the global population, climate change and depletion of the earth's natural resources need science.
- Science progress in **two fundamental and equally important valuable ways**. The vast majority of scientific understanding advances **incrementally** with new projects building upon the results of previous studies or testing long-standing hypothesis and theories. This progress is evolutionary – it extends or shifts prevailing paradigms over time.
- Less frequently, scientific understanding advances dramatically, through the application of radically different approaches or interpretation of the results in the creation of new paradigms or new scientific fields. This progress is revolutionary, for it transforms science by overthrowing entrenched paradigms and generating new ones.
- The vast majority of research conducted in scientific laboratories around the world fuels the incremental advancement of science. Most funding agencies, fund science that has predictable productivity or opportunity for success limiting the possibility for many researchers to submit or resubmit paradigm—challenging ideas or transformative research
- Transformative science has traditionally been very difficult to fund. In addition Transformative research does not fit well within the operational framework of most research universities and educational institutions, where the intellectual tendencies lean towards upholding and building off, of the existing disciplinary boundaries and scientific paradigms. These tendencies can hinder the intellectual versatility necessary for developing transformative ideas.
- Besides, transformative innovations are often produced by those outside of the mainstream schools of thought and by those who **do not** necessarily have the sort of track record needed for being competitive in the grant application process. Moreover, the peer review system for grants is typically dominated by scientists who share a deep-rooted commitment to the mainstream paradigm and who may unintentionally undervalue a revolutionary idea and resist a paradigm shift.
- To advance the frontiers of human knowledge and find solution to the societal challenges, requires, indeed **demands**, that our research portfolio contain investments with long odds of success but, if successful, with the ability to fundamentally transform our understanding
- For this to happen we need to offer a place for scholars and innovators to work, think, and discuss without inhibition. We need to support research that is transformational and that challenges current paradigms. A freedom that encourages greater boldness of ideas and aspiration within the research community
- Conventional insular agricultural research is increasingly inadequate in the face of growing complexity and uncertainty.
- Research to support transformational change therefore needs to be interdisciplinary and engage with relevant insights from diverse areas, including futures thinking, innovation studies and socio-technical transitions studies rural and political geography resilience thinking and the mainstream climate risk management literature, including that on migration and climate change adaptation.
- To be effective, research particularly at a transformational level, it is crucial that the underpinning research is cross scale, cross-sectoral societal shift that agriculture needs to adapt to.
- More than interdisciplinary, such research also needs to be transdisciplinary, which refers to the integration of non-academic knowledge through participatory processes and in developing systems of adaptive governance.
- Working with farmers is vital while undertaking transformational changes, in order to better understand and help assess the consequences of different transformation options. This will avoid problems of over- or maladaptation.
- Policy makers, agricultural organisations, agribusiness, agricultural advisors and rural community groups are other important 'end users' and shapers of research into Transformational adaptation of and in agriculture. Effort is needed to bring these different perspectives together to discuss the cross-

scale and cross-sectoral shifts that may eventuate under climate change and increase the social learning that is needed for appropriate transformation

What are the entry points for science?

- Research Institutions could develop new and more effective approaches to encourage, to evaluate and to fund research that has the potential to transform disciplines.
- We need policies aimed at soliciting, identifying, and funding transformative research to evaluate the Transformative, innovative high risk and bold ideas

Some steps have already started e.g.

- The evaluation procedures of some organizations' focus as much (if not more) on the quality and training of the individuals selected on the proposed projects , e.g. seek exceptional individuals who have a unique worldview and are dedicated to pursuing their creative vision. These organisations are using a network of nominators to identify such individuals. Nominations are confidential and there is no direct application or interview process.
- Identify researchers who question prevailing assumptions in a given field through workshops structured specifically around such issues.
- Identify individuals or small groups or write proposal , which are then reviewed and redefined by expert advisers working together with the investigators
- Support for exploratory research – a pre grant- to support preliminary work on untested and novel ideas, venture into emerging research and critical research questions that arise unexpectedly.
- We need a variety of approaches to the selection process and develop new pathways to stimulate proposals for transformative research that might not be submitted
- Developing an appropriate review and funding mechanisms that can cross-traditional organizational boundaries.
- Awards sufficient in amount and duration to sustain and accomplish the work.
- Have an option of being an individual investigator or multiple investigators.
- Organize events that enable and encourage discussion of paradigm challenges
- Call of proposals unrestricted as to discipline

Science has a big role in transformative change. So far science and quality assurance review system is functioning effectively to support the excellent innovative research that is significantly advancing the frontiers of knowledge. Nonetheless, we cannot afford to miss opportunities, discoveries, and new frontiers that can result from bold, unfetter exploration and freedom of thought that challenges our current understanding of natural processes.

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