

Workshop Report

Agri-food Systems Innovation: Pathways to impact

Resetting the conversation on agri-food system innovation

The CSIRO Agriculture and Food & the CGIAR Independent Science and Partnership Council (ISPC) Secretariat are collaborating to explore the nature of agri-food systems innovation and impact. This workshop report is a record of the key outcomes from a workshop held on the 14-15 December 2016 in Canberra, Australia.

Suggested citation

CSIRO & CGIAR ISPC Secretariat (2016) Workshop Report. Agri-food systems innovation: pathways to impact. Resetting the Agri-food Systems Innovation Conversation. CSIRO, Australia and CGIAR ISPC Secretariat, Rome



Independent
Science and
Partnership
Council



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Introduction

Agri-food systems, both nationally and globally, face an unprecedented set of opportunities and challenges. On the one hand, there are major concerns over the sustainability of production systems and the expanding and changing patterns of demand placed on this by an increasing and urbanizing population. On the other hand, we live in an age of extraordinary technical opportunities in a globally connected world where business and social solutions are emerging at the interface of agriculture, energy and health. Shifting the agri-food system and the world to a new and sustainable level of prosperity may seem daunting. Paraphrasing the Club of Rome, however, “The future only looks gloomy through the technical and institutional lenses of the past”.

Innovation is at the heart of the path ahead. The real challenge, however, is how to rethink the innovation process, so that it is not just addressing component solutions, but so that it is helping to transform agri-food systems as a whole. This will involve elevating agri-food systems to a new plane of productivity, sustainability, and responsiveness to the changing values and demands of society. A number of issues stand out:

- Although current agri-food systems arrangements may have served us well in the past, there is a clear need to transform these systems to meet the needs of the future;
- The scope of innovation needed to advance this transformation cannot be tackled effectively by component solutions or single stakeholder groups: it needs systems solutions and collective action;
- Transformation will not be achieved by quick fixes or tweaks but will require deep and long-term changes.
- The pathways to transformation are yet to be defined and are likely to be contested, as it requires the questioning of current realities and the consideration of unimagined futures.

Meaningful engagement in this transformation agenda needs careful consideration. A starting point would seem to be the resetting of debates and ways of thinking about agri-food systems innovation. This is going to involve reframing the conversation about how innovation occurs, and particularly how it happens as part of a system-wide process of transformation.

Purpose of the workshop

The purpose of this workshop was not to arrive at answers to how agri-food systems innovation should proceed. Rather its purpose was to think through how a conversation that brings in new framings, perspectives, analysis, and evidence on innovation and change in agri-food systems can be started. In other words, how can the meta-narrative on agri-food system innovation be changed so that new pathways of action, research, and policy can be opened up to advance a transformation agenda? The workshop, therefore, sought answers on how to start these new conversations. What needs to be done collectively going forward? Who needs to be involved? How do current narratives of change need to be reframed? What are the real bottlenecks, and what evidence, analysis, and resources are needed to drive these discussions.

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.

In preparation for the workshop, a framework was shared on different modes of innovation: incremental, radical and transformative (This framework and summaries of supporting case studies are presented in annex i). The purpose of the framework is not to prescribe how innovation should be organized in the future. Rather, its purpose is to start and redraw the boundaries of the debate and to promote the types of conversations needed to start taking the first steps towards the change process that needs to involve us all.

The record of the workshop that follows, attempts to capture, in brief, the deliberations of the participants. Its main emphasis, however, is in sketching a roadmap of actions up to December 2017. During this period, the ISPC and CSIRO have modest resources to catalyse the start of a process to generate a new debate on agri-food systems innovation. The success of this, however, will be dependent on the creation of a community of interest and resources to drive debates and actions forward.

What we discussed

The workshop included two keynote presentations (Annex ii), a series of shorter insight cameos, and a number of bespoke discussion exercises.

Lock-ins and Bottlenecks: international perspectives from the CGIAR.

The first key note by Dr. Jonathan Wadsworth, World Bank, titled “Lock-ins and Bottlenecks: International perspectives from the CGIAR”, presented a number of sobering points about current trends in achieving global development objectives and lock-ins that seem to be restricting change. The sustainable development goals present an articulation of these objectives, but the sense of the presentation was that the international community needs to seriously up its game if these are to be achieved. The presentation made the point that transformations have taken place in the past, but these are long term processes not triggered by technological breakthrough *per se*, but by changes in markets, policy and social setting that enabled the pervasive use of these technologies. This was illustrated with the slow take-off of silage technology in the UK and dairy production in Costa Rica. His presentation also warned of the danger of pursuing legacy research and development objectives, when the dynamics of food-systems have made these less important than emerging factors. In concluding, the presentation suggested that the international agricultural research community is locked into a cycle of incremental innovation and adaption, and identified a number of key lock-ins that reinforce business as usual and undermine progress towards the achievement of global development goals:

- An unprioritised innovation portfolio with little attention to the balance of investment across the incremental to transformative spectrum;
- A lack of meaningful impact monitoring that can help track progress towards transformational change and send feedback for course correction;
- Legacy patterns of human resources in the areas of management, governance and research;
- A lack of integration of the component parts of the international agricultural research and innovation system;
- Unaligned donor support decisions and perverse incentives that skew portfolios towards incremental change.

Australia’s Agri-food innovation ecosystem.

The second keynote presentation from Dr Brian Keating, CSIRO honorary fellow, titled “Australia’s agri-food innovation ecosystem”, charted the historical development of Australia’s innovation arrangements. The presentation highlighted that despite a century of innovation-driven productivity and efficiency gains in Australian agriculture, there is increasing cause for concern that momentum has been lost. This is a particular concern given the dynamics of the East Asian agri-food system and the opportunities and challenges this presents. The presentation also flagged the long-term nature of transformational innovation processes and the importance of robust public investment in these. The main message of the presentation was that it is perhaps time to have a ‘look under the hood’ of the agricultural innovation system, to check out how it is working and where it might need some adjustments. Key concerns identified included:

- Limited data and understanding on how the 'system' is structured and functions;
- Locked into historical structures and approaches and limited openness to explore improved functionality. Most incentives drive 'local optimisation';
- Commodity industry funded (Rural Research and Development Corporations (RDCs)) model over emphasises 'on-farm productivity', and works against crosscutting opportunities and value chain approaches;
- Social forces in the RDC model can work against high-impact 'tailored' solutions and novel public-private partnerships;
- 'Leverage game' of matching public research funds with industry research funds taken to extremes that destroy overall system functionality.

These two keynote presentations set the scene and discussion themes for the remainder of the workshop. These overarching themes included:

- *Path dependency*. Much of the way research and other organizations and stakeholders engage in the agri-food system innovation debate and practice is shaped by historically derived path dependencies. These path dependencies make it difficult to follow more transformational pathways of innovation. The discussion adopted the term 'lock-in' to denote the practices, traditions, approaches, and policies that prevent changes to new directions and visions;
- *Systemic solutions*. Many of the current 'solutions' tend to treat symptoms rather than the root causes of an R&D system and culture locked in by its own history and achievements. Shifting the debate to consider the systemic nature of the challenge of agri-food system innovation requires a considerable change in thinking and practice;
- *Innovation modes*. The debate going forward is not about a dichotomy among different modes of innovation, but rather about the mixture and sequencing of innovation that will allow agri-food systems to transition to new modes of production and consumption adapted to society's ambitions outlined in the SDG's;
- *Tracking agri-food systems*. Far too little is currently understood about how current agri-food system innovation operate and at the same time evidence is thin on what the missed opportunities are as a consequence of existing arrangements.

A series of bespoke discussion exercises explored both the nature of lock-ins, as well as the nature of a campaign to start and change the debate and practice around these. This led to a rather ambitious list of actions that could underpin a change campaign. The lock-ins discussed included the following:

LOCK-IN: Islands of optimization. This lock-in is characterised by a focus on investment in high visibility, quick win, isolated actions that pays little or no attention to the externalities/broader context of such action.

LOCK-IN: Political economy of agri-food systems. This lock-in is characterised by the way dominant stakeholders and patterns of governance drive agri-food system innovation to meet a narrow set of needs that are misaligned to wider societal goals.



LOCK-IN: *Lack of vision on how to achieve the SDGs.* This lock-in is characterised by the absence of a shared understanding and vision of what the agri-food innovation system that can help deliver the SDGs looks like, and a lack of knowledge how current agri-food innovation systems are ‘tracking’.

LOCK-IN: *Dominance of farm focused R&D – systems view.* This lock-in is characterised by the nature and focus of funding strategies and reporting policies that skew research priorities towards incremental change activity only.

Suggested Campaign tasks

Case studies and mapping of existing systems

- ‘Map’ existing agri-food innovation systems, actors and their relationships, their trajectories (issues, properties, investment, cultures), their current and emerging vulnerabilities (e.g. poor capacity mix to achieve impact or over dependence on single donors); and
- Implement retrospective case studies at different scales (e.g. Grow Asia and East Africa horticulture) and sub-sector ‘experiment’ horticulture Australia

Agri-food systems’ futures

- Consider plausible future domestic and international implementation environments (e.g. through a foresight and scenario building process), to subsequently assess current agri-food innovation systems strengths and vulnerabilities against these scenarios to identify interventions for enhanced system performance; and
- Clarify how agricultural science can best contribute to such evolution of local and international sustainable agri-food systems.

Innovation funding

- Revisit and collect new evidence on myths of funding mechanisms to feed into a high-level dialogue on funding modes to agri-food system innovation.

Resetting the conversation

- Initiate the articulation of the missing meta-narrative through the production of a White Paper; and
- An analysis of how to connect SDGs to the national level and how it informs ‘fit-for-purpose’ innovation, using an aid / trade / innovation / SDG convergence framing.

Stakeholder engagement, communication and advocacy.

- Identify other groups that are tackling issues aligned to rethinking agri-food systems innovation.
- Issue an open call on who wants/needs to be involved;
- Identify conferences, meetings and platforms where transformational pathways to agri-food systems innovation can be shared and promoted
- Establishment of a community of interest and bespoke communication mechanisms.



The way forward

Given the available resources, the ISPC/CSIRO team suggests to focus the initial ‘campaign’ efforts on the following tasks prioritized by the workshop:

- The agreement on, and implementation of a series of retrospective and contemporary agri-food systems innovation case studies at different scales;
- The drafting of a meta-narrative on agri-food system innovation;
- The analysis of the impact of different funding mechanisms and subsidies on agri-food system innovation; and
- The establishment of a community of interest and the associated organization of virtual and face-to-face campaign events;
- Selected support to ongoing and new activities aligned to the campaign tasks and objectives.

As we move forward in shaping the 2017 campaign and delivery agenda, we look forward to receiving your proposals for suggested involvement in the above listed activities, the proposed alignment / inclusion of existing work, and suggestions for additional campaign activities to be added to the list.

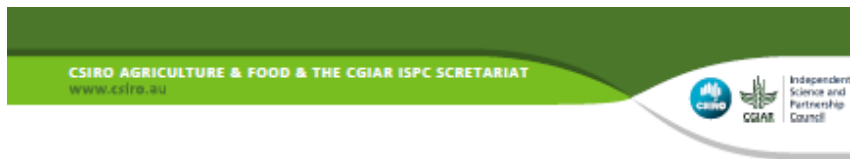
Annex 1: Participant List

Name	Organisation	Position
Andrew Campbell	Australian Centre International Agriculture Research (ACIAR)	CEO
John Dixon	Australian Centre International Agriculture Research (ACIAR)	Principal Advisor/Research Program Manager, Cropping Systems and Economics
Mellissa Wood	Australian Centre International Agriculture Research (ACIAR)	Director Global Programs
Julie Delforce	Australian Department of Foreign Affairs and Trade (DFAT)	Senior Sector Specialist Agriculture and Food Security
Simon Fielke	AgResearch NZ	Postdoctoral Scientist
Jeroen Dijkman	CGIAR Independent Science and Partnership Council (ISPC) Secretariat	Senior Agricultural Research Officer
Tim Lester	Council for Rural Research and Development Corporations	CEO
Maryann Augustin	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Breakthrough Bioprocessing Group Leader, and Lead for the CSIRO Food waste initiative & Global food security working group
Peter Brown	Council for Rural Research and Development Corporations	Researcher
Anne Maree Dowd	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Executive Manager Performance and Evaluation
Tony Fischer	CSIRO CIMMYT WHEAT-Independent Steering Committee Chair	CSIRO Honorary Fellow, Agriculture & Food Wheat CRP representative
Paula Fitzgerald	Commonwealth Scientific Industrial Research Organisation (CSIRO)	CSIRO Agriculture and Food Advisory Committee
Andy Hall	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Group Leader
Brian Keating	Commonwealth Scientific Industrial Research Organisation (CSIRO)	CSIRO Fellow
Jennifer Kelly	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Senior Innovation Broker
Larelle McMillan	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Senior Research Technician
Michael Robertson	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Deputy Director for Agriculture, CSIRO Agriculture and Food Business Unit
Steve Swain	Council for Rural Research and Development Corporations	Research Director Breakthrough genetic technologies for crop improvement

Name	Organisation	Position
Bruce Taylor	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Researcher
Dan Walker	Commonwealth Scientific Industrial Research Organisation (CSIRO)	Research Program Director
Peter Follett	Human Capital International	Workshop Facilitator
Steven McInnes	Human Capital International	Workshop Facilitator
Andrew Noble	International Center for Agricultural Research in the Dry Areas (ICARDA)	Deputy Director General for Research
Ruben Echeverria	International Center for Tropical Agriculture (CIAT)	Director General
Olaf Erenstein	International Maize and Wheat Improvement Center (CIMMYT)	Director, Socio-economics Program
B.M Prasana	International Maize and Wheat Improvement Center (CIMMYT)	Director, CGIAR Research Program MAIZE & Global Maize Program
Dave Watson	International Maize and Wheat Improvement Center (CIMMYT)	MAIZE CRP Program Manager
Robyn Johnston	International Water Management Institute (IWMI)	Head of office Myanmar
James Nielson	Monsanto	Technology Development Lead Asia and Africa Hub
Holger Minke	Tasmanian Institute of Agriculture University of Tasmania	Director & Head, School of Land and Food
Nighisty Ghezae	The International Foundation for Science (IFS)	Director
Ruth Nettle	University of Melbourne	A/Professor Agriculture and Food Systems
Jonathan Wadsworth	World Bank	Special Adviser (Agriculture Research), Agriculture Global Practice Former CGIAR Fund Executive Secretary
Neil Andrew	Worldfish	Regional Director, Pacific & Principal Scientist

For privacy reasons, contact details have been excluded from this list. If you would like to contact any of the participants at the meeting, please contact Jennifer Kelly at jennifer.kelly@csiro.au.

Annex 2: Workshop Brief



Agri-food systems innovation: Pathways to impact Workshop

Background

CSIRO and the Secretariat of Independent Science and Partnership and Council (ISPC) of the CGIAR have an ongoing collaboration 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 purpose of this initiative is to support a wider collaborative process that helps the development and application of explanatory principles, guidance, and tools to improve the impact effectiveness of investments in agri-food system innovation.

As a starting point, a case study-backed framework has been developed that describes three modes of innovation: incremental, radical, and transformational (Figure 1, description below, and Table 1). Each of these has distinct practices, partnerships, research contributions, policy settings, and scale attributes.

Purpose of the framework

The framework provides an alternative explanation of the way agri-food system innovation and impact occurs. This could potentially open up new opportunities to tackle critical issues in agri-food innovation systems in both global and Australian agri-food sectors. However, its intent is to scaffold a wider engagement with, and co-development of solutions to these issues rather than to provide a stand-alone answer.

Purpose of the workshop

The purpose of this meeting is to open up a conversation on this topic, to draw in a wider set of perspectives, and to explore collaboration opportunities. In particular the meeting aims (i) to identify limitations and missed impact opportunities of current agri-food innovation systems; (ii) to explore the nature of frameworks and tools needed to advance innovation and impact; and (iii) to develop a road map on how these could be co-developed to best meet the needs of different stakeholder groups.

The framework

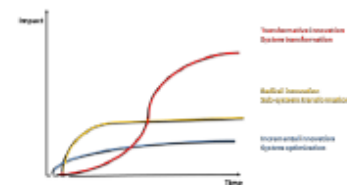


Figure 1: Modes of Innovation and Impact

Incremental Innovation or systems optimisation

Key characteristics. Incremental improvement of existing products and services or incremental improvement of value chain efficiencies that deliver marginal social, economic, and environmental impact in specific production systems and value chains.

Key processes and enablers. Case studies illustrate the way research helps develop incremental improvements in existing farming systems and individual value chains. These deliver valuable local improvements to livelihoods of smallholders and profits for value chain actors. Demand-led research and collaborative action by local stakeholders are critical in defining and developing solutions. The scale of impact, however, is often restricted by the absence of policy, institutional and market systems changes and investments needed to spread and sustain these innovations.

Radical innovation or sub-system transformation

Key characteristics. Technological and/or market "step changes" or discontinuities that open up new economic, social and environmental impact opportunities in a specific sub-sector or market sector and open up new opportunities for incremental innovation.

A copy of the brief, can be found

at <https://www.dropbox.com/sh/kb9hghy7qvdpta5/AABWQaM2y9zOyzpreqgERTfza?dl=0>.

Annex 3: Presentations



Australia's Agri-food Innovation Ecosystem

Brian Keating

Canberra Workshop
14th December 2016

Agri-food innovation: Pathways to Impact

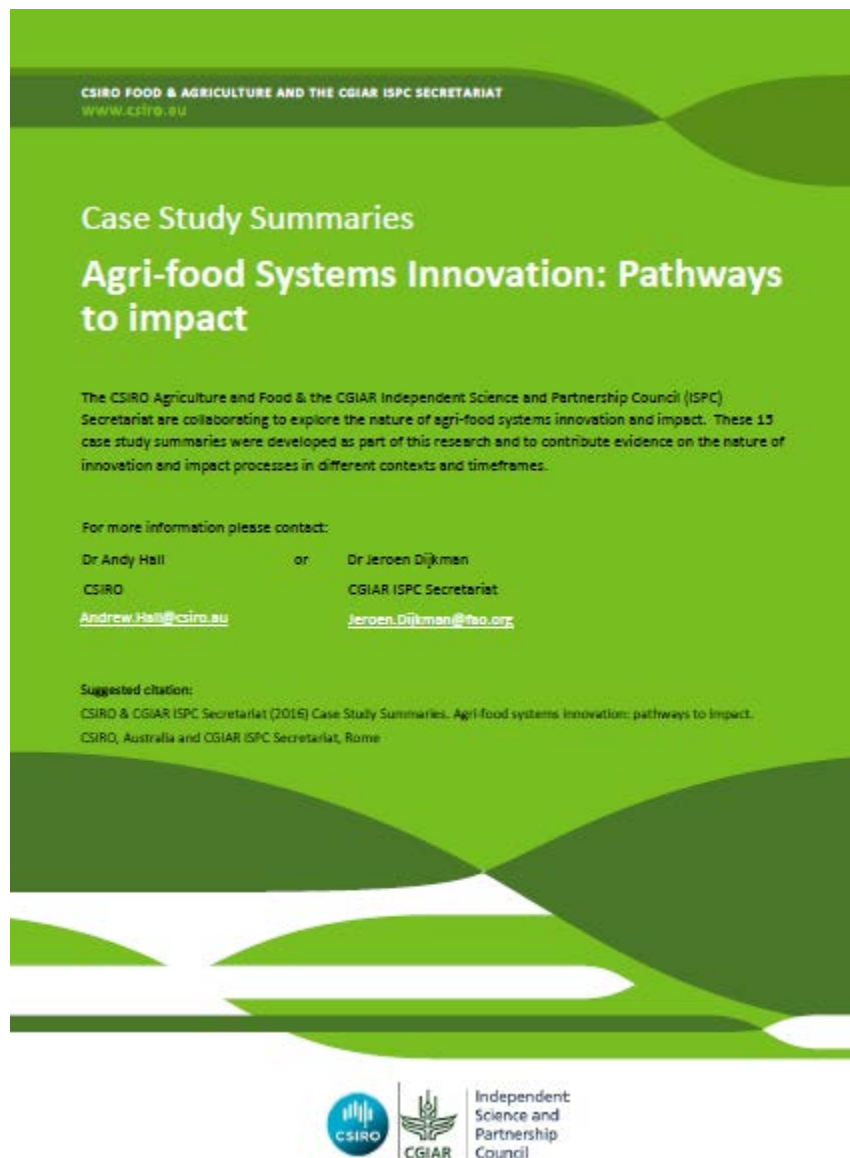
Lock-ins and Bottlenecks:
International Perspectives from CGIAR Experience

Jonathan Wadsworth

December, 14-15 2016, Canberra, Australia

A copy of the presentations, can be found
at <https://www.dropbox.com/sh/kb9hghy7qvdpta5/AABWQaM2y9zOyzpreqgERTfza?dl=0>.

Annex 4: Case study summaries



A copy of the case studies, can be found at <https://www.dropbox.com/sh/kb9hghy7qvdpta5/AABWQaM2y9zOyzpreqgERTfza?dl=0>.

FOR FURTHER INFORMATION
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