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'Capacity to innovate' from a system-CRP perspective

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Introduction

The three system CGIAR Research Programs (CRPs) have included 'capacity to innovate' as an intermediate development outcome (IDO) in their respective theories of change. This note captures our collective thinking about this IDO from a system's perspective to clarify it and inspire other programs.

What is a system's capacity to innovate?

Integrated systems are complex wholes in which a range of social and bio-physical processes interact across various levels and scales. Re-orienting the dynamics of systems in favor of realizing desirable outcomes (e.g. IDOs) is essentially about changing the way people interact with each other and respond to their changing environment. Concerted action requires capabilities at the level of individuals, communities, organizations and networks, as well as capabilities among those who have a mandate to catalyze and support innovation processes in society, international NGOs, the CGIAR system itself and funding agencies.

Core capacities that are needed at the level of interdependent societal stakeholders include:

- the capacity to continuously identify and prioritize problems and opportunities in a dynamic systems environment;
- the capacity to take risks, experiment with social and technical options, and assess the trade-offs that arise from these;
- the capacity to mobilize resources and form effective support coalitions around promising options and visions for the future;
- the capacity to link with others in order to access, share and process relevant information and knowledge in support of the above;
- the capacity to collaborate and coordinate with others during the above, and achieve effective concerted action.

In supporting the above, those with a mandate or willingness to catalyze system innovation processes will need to develop:

- a conceptual understanding of how change comes about in complex systems and how to intervene effectively;
- the ability to orchestrate and facilitate interaction in support of the above;
- the ability to inform societal agents and embed research activity in ongoing processes of change.

Together, these capacities form a system's capacity to innovate.

Why is it important?

The essence of sustainability and resilience lies in the capacity to innovate and adapt. Communities living at least partly from agriculture and natural resource management are in the midst of a rapidly changing world. This requires continuous adaptation of technology as well as social and institutional arrangements (e.g. values, incentive systems, formal and informal rules, market organisation, land-tenure systems, policies). When actors at different levels in agricultural research and development (ARD) – ranging from poor women farmers to international ARD policymakers – can better interact, they can bring their different perspectives and insights into the process of understanding the dynamics and exploring how to deal with them. This makes them better able to react quickly, flexibly and creatively to shocks, challenges and opportunities. Thus, the capacity to innovate is key for resilience – for the survival and wellbeing of society. Moreover, as indicated earlier people and their (inter)actions play an important role in building and changing the coherence of a system. Focusing on increasing the capacity to innovate within poor and vulnerable people – i.e. on inclusive innovation – can change the power balance, so that these people can recognize more possibilities, unfold their innate creativity and more confidently tackle newly emerging problems and opportunities in a more equitable world.

Mechanisms to enhance it through research

Researchers and research activity can play various roles in enhancing capacity to innovate. Besides playing more conventional roles (e.g. that of an outside informer or advisor) researchers may be invited to conduct collaborative research in already existing spaces of interaction. When such spaces are lacking, or if they are restricted to specific issues, scales or levels, research organizations can themselves create spaces by initiating and facilitating multi-stakeholder mechanisms such as innovation platforms. These bring relevant actors together to identify, analyze and address opportunities and constraints in a sub-sector or related to a specific theme. Research and inquiry in such platforms can inspire and provide eye-openers, and. when done in a collaborative mode, can help reduce critical uncertainties, result in common understandings and more agreement about problems and solutions, as well as structurally improve relationships among interdependent stakeholders. All this is highly relevant to fostering meaningful change, development and innovation. Tasks that researchers can perform in such settings include:

- Helping people visualize their networks and how they might connect to others and other initiatives, across interdependent levels (e.g. using social network analysis)
- Providing relevant knowledge and information
- Helping people reflect on and analyze their situation, problems and opportunities
- Eliciting critical uncertainties and translating these into research questions for different disciplines
- Helping people experiment with a variety of options and analyze trade-offs
- Documentation of and reflection on the process as part of M&E efforts.

Another strategy is to employ participatory methodologies for more generic reflection on the functioning of innovation support systems and interaction patterns with relevant stakeholders (e.g. Rapid Appraisal of Agricultural Knowledge Systems, RAAKS). Such approaches provide a model of learning and inquiry that specifically aims at diagnosing cross-cutting problems in specific sub-sectors or realms of innovation. Finally, research may study the contribution of different mechanisms (including innovation platforms) to building a system's capacity to innovate, and feed findings back into policy and practice.

How does it fit in our Theory of Change

The overall role of a system's capacity to innovate in the theory of change of Humidtropics, Dryland Systems and Aquatic Agricultural Systems is shown in Figure 1. The relation with other IDOs will be situation and program specific, hence is not specified here in detail.

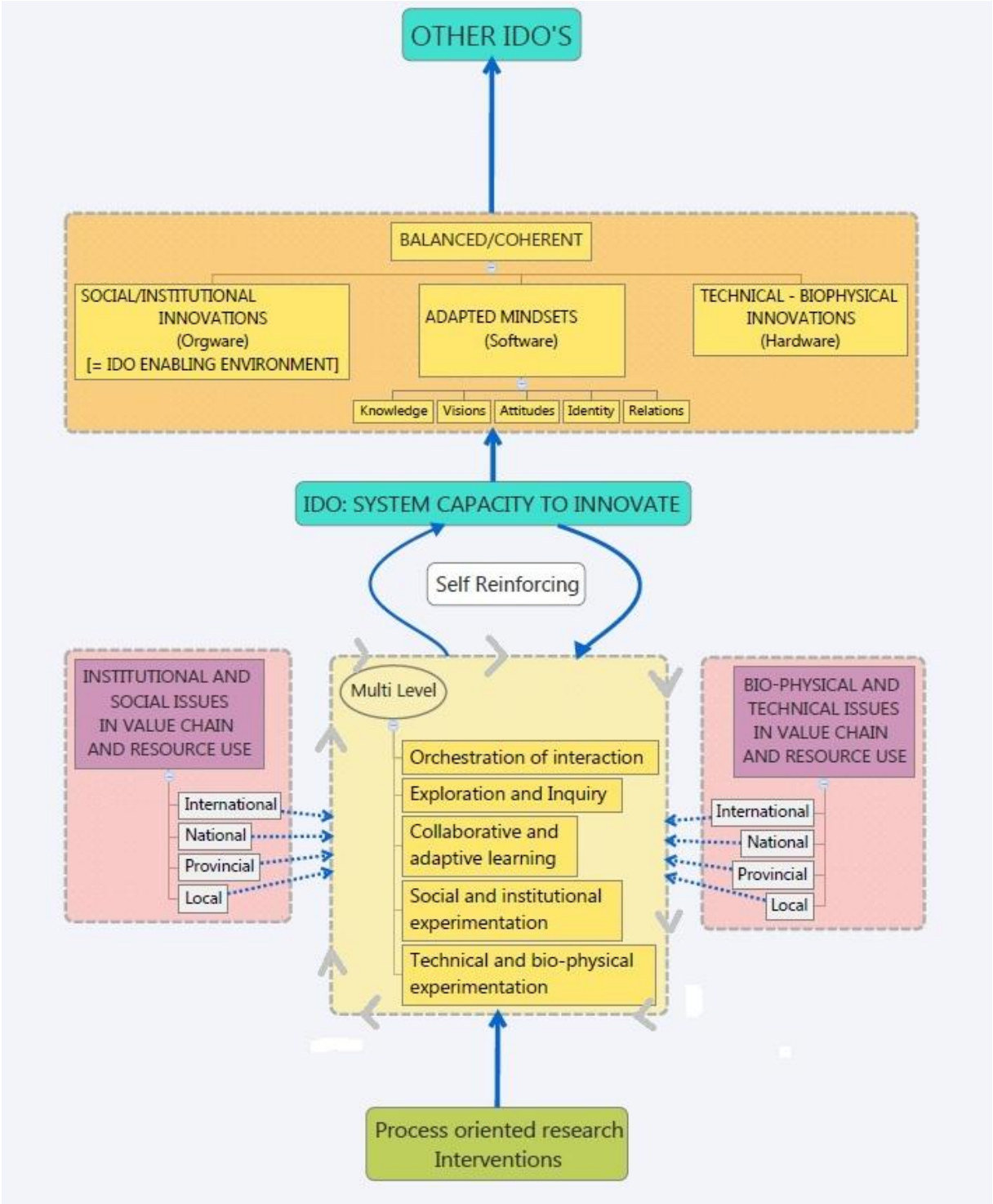

Figure 1: Graphic representation of the role of a system's capacity to innovate in the theory of change

Reasoning from bottom to top, we see research as a process-oriented intervention aimed at contributing to system change. Research interventions can take various forms, and are likely to include orchestration of interaction, exploration, learning and experimentation. This at various interconnected levels, and addressing social and institutional issues and questions as well as bio-physical and technical issues and questions, as related to the functioning of value chains, the use of natural resources, and associated livelihood patterns. This is an evolving an iterative process that goes along with the gradual building of capacity to innovate, which in turn enhances the process in a self-reinforcing manner.

In an ever changing and uncertain environment, it is important to experiment with a range of options, both in the realm of technology and management practices, and in the realm of social organization and interaction. Through improved capacity to innovate, stakeholders can select, combine and strengthen specific options, eventually resulting in coherent combinations of 'hardware' (technical innovations), 'orgware' (social innovations) and 'software' (adapted mindsets). Hereby, new 'orgware' may include changes in policy, market organization, legal frameworks, service provision and incentive systems that are necessary to enable people to make use of new ideas and technical opportunities. From a systems perspective, creating these enabling conditions for technology to work need to be seen as part and parcel of the innovation challenge. These new combinations, then, will eventually result in the realization of other IDOs and eventually system level outcomes (SLOs). Given the many constraints affecting the countries in which we work, and the fact that system innovations have a time horizon of at least 10 years even under favorable conditions, we are talking about a long-term process.

How do we measure it?

When measuring the 'capacity of the system to innovate' we need to find a balance between indicators of the capacity itself, and the manifestations and consequences realized through this capacity. This is actually much the same as in research on e.g. 'soil fertility': when we add fertilizer to the soil in order to enhance soil fertility, the indicators we use to assess whether soil fertility has effectively increased often relate more to the response of plants (plant growth, yields, etc.) and less to the nutrient status of the soil.

In this vein we will use several indicators that are more directly linked to the capacity itself, such as:

- number of networks and initiatives involved in exploration, inquiry, technical and social experimentation, adaptive learning, etc;
- number of technical and social experiments that are ongoing and/or have been carried out, and additional attributes (type and number of participants involved and represented; inclusiveness; appreciation of experimentation; level of complexity and ambition; scale and level of operation; etc.);
- existence and use of linkages in order to access knowledge and information;
- extent of coalition formation around promising initiatives and options;
- conducive modes of thinking and acting in innovation support environments.

In addition we will use indicators that are linked to the outcomes generated through the system's capacity to innovate. Such indicators include:

- upscaling and outscaling of interlinked technical innovations and social-institutional innovations (i.e. enabling changes in incentive systems, markets, legal rules, policies, collective action, relations, etc.)
- changes in mindsets realized among interdependent actors (in terms of their knowledge, understanding, discourse, vision, attitudes, etc).

Both quantitative and qualitative strategies for data collection and analysis will be used in measuring progress against these indicators, and where appropriate participatory M&E approaches will be used. In order to evaluate whether or not research interventions have contributed to emerging changes, we will make use of M&E for learning approaches that allow us to prospect for emerging change and retrospectively identify theories of change (i.e. causal pathways) and then evaluate CRP contribution. This can be done through 'quick-cycle' approaches such as most significant change, outcome harvesting as well as longer duration ones such as documentation of innovation histories. Building, testing and further improving theories of change, based on what we learn in this way will build understanding of how change comes about in complex systems and how to intervene effectively. M&E for learning can build capacity to innovate.