

**Strategic overview of CGIAR Research programs  
Part I. Theories of Change and Impact Pathways**

December 2012



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**Strategic overview of CGIAR Research programs  
Part I. Theories of Change and Impact Pathways**

**Independent Science and Partnership Council  
17 December, 2012**

**SYNTHESIS AND COMMENTARY**

**Executive Summary**

The think piece on Theories of change and Impact pathways, commissioned by the ISPC centers around theoretical articulation of the concept and components of a Theory of change (TOC). It provides a useful assessment of the adequacy and thoroughness by which the CRPs present the assumptions about their research leading to the planned outcomes and impact. The recommendations, based on this analysis, are highly relevant across the CRPs to help the programs to think through the mechanisms by which the changes, proposed in the research plans, are likely to happen. The most important aspects recommended to be addressed are:

- Incorporating non-linearity to research planning
- Embedding learning mechanisms about research uptake and impact into the research process
- Regular review and updating of the TOCs
- Assessing counterfactuals on the impact stream by monitoring
- Developing a communication strategy for discourse and engagement with stakeholders
- Directing the research benefits to those intended, including women.

Appropriately framed TOCs can help broaden and deepen the understanding of impact pathways. In large and complex programs the ISPC thinks that a single, generic TOC will not suffice but the major impact pathways should be supported by a thorough and realistic TOC. The ISPC, in its assessment of the CRP proposals, drew attention to the often very generic impact pathway presentations that fell short of considering the assumptions linking outputs to outcome and impact, and feed-back loops. This think piece offers valuable analysis and guidance for the CRPs to immediately improve their program planning and make feed-back and adjustment of plans a systematic part of the management process.

**Introduction**

In 2011-2012, the Independent Science and Partnership Council (ISPC) assessed nearly all the CGIAR Research Program proposals<sup>1</sup> for their investment worthiness; several of them also in revised form. It became obvious that the research outlined for the early years of most

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<sup>1</sup> GRiSP was approved in 2010 prior following recommendation by the Science Council, ISPC's predecessor.

CRPs represented, to a considerable extent, on-going research bound by contractual agreements brought together under the CRP umbrella. As such, these CRPs would need to consciously transition towards a more coherent and focused program building around the components that most clearly targeted the System Level Outcomes (the central CRP goals). The Series-1 CRPs (focused on an approach to improve agricultural systems in different agro-ecologies) are presented with an additional challenge embodied in the need to develop a holistic research agenda through a participatory process. Ideally, the process of developing CRPs would have taken place within the context of an overarching strategy, but it was not until April 2011 that the CGIAR adopted a Strategy and Results Framework (SRF), which outlines four System Level Outcomes (SLOs)<sup>2</sup>. There was a general consensus that further iteration and alignment between the evolving CRPs and revision of the SRF would be essential as part of the CGIAR reform. This ISPC strategic overview of key challenges common to most CRPs is intended to help facilitate that process.

Given work already carried out by the Consortium and the CRPs themselves, the ISPC's strategic, cross-cutting review of the CRPs focused on three specific themes: Theories of change and impact pathways; Value chains; and Seed systems. For each theme the ISPC commissioned a strategic think piece based on an analysis of relevant content from each CRP proposal, current literature on the topic, and expert knowledge of the author(s).<sup>3</sup>

This document contains the commissioned think piece on *Theories of change and impact pathways* (Annex p.8) prefaced by the ISPC synthesis and commentary. The key terms used in this study are explained in Box 1.

**Box 1. Definitions of key terms used in this document**

**Logic models (logical frameworks)** – Link inputs and activities to outputs, outcomes and impacts in a visual presentation. Logic models do not provide insights into causality. The detail tends to be in the activity and output levels. Assumptions and risks that are part of a logical framework presentation tend to be outside the control of the program. Logic models follow an agreed presentational form.

**Impact pathways** – Build on logic models by giving more detail on the contribution of each activity on its path to impact. Impact pathways unpack the links between outcome and impact. Impact pathways are commonly presented graphically.

**Theory of change (TOC)** – Presents an explicit identification of the ways by which change is expected to occur from output to outcome and impact. The TOC questions the assumptions about causality underlying the relationships between outputs, outcomes and impact. In TOC the assumptions present the mechanisms of change. There is no single method or presentational form agreed for TOCs.

<sup>2</sup> The four SLOs described in the SRF are: Reduction in rural poverty; Increase in food security; Improving nutrition and health; and, More sustainable management of natural resources.

<sup>3</sup> The think pieces on Value chains and Seed systems can be found at: URL

## **Scope of the analysis**

The assessment of theories of change (TOC) and impact pathway development in the CRPs deals with the planning process and logic linking activities vertically with the strategic objectives of the CGIAR, the four SLOs. All CRPs were expected to explain the impact pathways of the program and its components, including constraining and facilitating factors that would need to be addressed in planning and in monitoring of the impact pathway. The CRP development and assessment guidelines did not explicitly require elaboration of the TOC underlying the CRP plan. However, as described in the paper (attached), the assumed relationship between the outputs, outcomes and impact is expected to be supported by a theory that elaborates the process by which change occurs. An analysis of the main drivers of change and the context in which change is expected to ensue is an important part of TOC development. The think piece on TOC and impact pathways was commissioned following publication of the ISPC's White paper on prioritization<sup>4</sup> to which it is closely linked.

The Terms of Reference for the analysis of TOC and impact pathways asked for an assessment of the thoroughness and degree of realism demonstrated in the impact pathway and TOC descriptions presented by the CRPs so as to link the proposed research to the high level SLOs. There was a particular requirement to identify the constraining and facilitating factors on which success for outcomes and impacts may depend. The analysis was to be done against the principles and concepts underlying the use of TOC drawing from development literature and current thinking. The review was expected to highlight generic aspects of appropriate TOC so that CRPs could use this information to improve analyses underpinning their impact pathways. Thus authors were also requested to identify where CRP proposals addressed issues in a way that could be considered "good practice".

The key content of the commissioned paper is presented in the following sections (pages 2-7) focusing on those issues and recommendations that the ISPC considers of greatest relevance for the CGIAR and CRPs as they evolve and as the linkages from research to development results are analyzed and tested through planning and research.

## **ISPC commentary and synthesis of the analysis**

The TOC concept has only recently become commonplace in development literature. Its description does not have an agreed format, but there are a few essential elements that the concept encompasses. The authors identified five major dimensions related to the change process, which form the framework of their assessment of the CRP proposals and are discussed below. A TOC provides an explicit identification of the mechanisms by which change is expected to occur. It puts emphasis on the causal processes that lead to the change. Importantly, it is an impact-oriented approach that questions and seeks to validate the assumptions underlying the relationships between output, outcome and impact, addressing complexity and causality. In the CRPs, this terminology is not consistently used, but most CRPs discuss the drivers of change and constraints to impact in their justification of the program agenda and for the plausibility of the impacts the proposals claim.

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[http://www.sciencecouncil.cgiar.org/fileadmin/templates/ispc/Expert\\_advice/Advice\\_to\\_the\\_CGIAR/Strengthening\\_Strategy\\_and\\_Results\\_Framework\\_through\\_prioritization.pdf](http://www.sciencecouncil.cgiar.org/fileadmin/templates/ispc/Expert_advice/Advice_to_the_CGIAR/Strengthening_Strategy_and_Results_Framework_through_prioritization.pdf)

### ***1. Linearity of the impact pathway***

The TOC concept emerges from the growing recognition of complexities in the real world, particularly concerning changes associated with development. The extent to which the CRPs present, or at least acknowledge, the non-linearity of impact pathways from research to development outcomes and impacts seems to correlate with the thoroughness and realism in the proposal regarding the assumptions that underpin pathway linkages. Although the graphic illustrations of impact pathways in most of the CRPs imply a linear path, this may be a limitation of the illustration. The narratives in several CRPs acknowledge that there may be alternative and iterative pathways, and that certain outcomes may help to enable other outcomes. The ISPC agrees that sometimes single outcomes, although necessary, are not sufficient for achieving intended impacts, and that a “causal package” may be needed. Importantly, several CRPs acknowledge that feed-back loops and learning will enable them to adjust their impact pathways and research approaches. In contrast unintended outcomes are not discussed in the CRPs.

The authors raise an important point: that for decision-makers (research managers and funders) it is important that the anticipated change (among target audiences or domains) is clearly stated. The ISPC agrees with this point; there is an optimal level of complexity to be included in analysis for research planning. Below that optimum (e.g. where the program outlines the research results without considering *how* change will be effected), important interactions, feedback and spillover effects may be missed in a way that fundamentally alters the expected outcome. The introduction of too much complexity, on the other hand, leads to paralysis and an inability to see what the most important components of a problem are and how they can be feasibly addressed.

This discrepancy between a simplified plan and the complexity of the real world means that the planned outcomes and impacts from the research are the best projections possible at the commencement of the research. Emphasis should be placed on the thoroughness and realism of the planning. This includes the rigor by which progress is monitored, feed-back processes are included in the research design and impact pathways are adjusted. Mechanisms need to be thought through and described by which lessons learned from program activities and partners are channeled into activities that facilitate progress and address constraints to adoption and outcomes. In monitoring and evaluation uncertainty and, importantly, serendipity need to be acknowledged as characteristics of research.

### ***2. Mechanisms of change***

Mechanisms of change are at the core of the TOC. The authors highlight the importance of basing the theory in a global body of evidence. In the authors’ assessment, the extent to which evidence was given in the CRPs to support the presentation of the mechanisms (or drivers) of change, and the extent to which alternative processes in research uptake were presented, reflected the overall realism of the impact pathways in the proposal. The authors argue that in order to monitor whether the mechanisms of change may actually work, some explicit parameters of evidence will need to be defined. Often this was not the case in the CRPs. In the examples given, the authors find cases where certain approaches (such as on-site trials, participatory methods or communication strategies) are proposed because of their effectiveness for enhancing successful adoption. The ISPC considers that additional emphasis could be given to genuine 2-way communication, particularly with development partners, to understand fully the context in which the research results will be applied.

The authors cite examples where CRPs have identified factors, on the basis of earlier evidence, that control transferability of research results. CRPs also identify factors beyond the control of researchers, which nevertheless need to be monitored, such as institutional and political issues that will govern the success of each program in turning research results into impacts.

Obviously in research that is expected to be innovative and breaking new ground, and as we move further along the impact pathway from research to development impacts, the evidence of causality is seldom complete. It is for the research process to test hypotheses of causality and of mechanisms of change to generate and improve the evidence base regarding research and the expected development outcomes. Trade-offs between alternative outcomes are rarely taken into account - but should be. Impact evaluation literature now gives much greater consideration than before to causal processes and rigorous causal identification. Analysis of the mechanisms of change will help in the formulation of key hypotheses concerning the effects of the research, and this then becomes a continuous process guiding the CRP.

The think piece focuses at the CRP level. At the system level, the CGIAR bases its high level strategic planning on what is assumed for general mechanisms of change. The SLOs have been determined assuming that agricultural research can contribute to desired changes in those four areas. The general mechanisms are informed by specific pieces of evidence accumulated from programs over time (in the CGIAR and elsewhere), at the level where the causal linkages between agricultural research and the societal impacts can be observed. What the CGIAR needs to do is to link the program and system levels through communication about experiences and issues. In developing and adjusting priorities, such iteration from CRP to SLO level and back is essential. The Science Forum is a channel for the ISPC to pursue those connections<sup>5</sup>, but it is expected that the CRPs will also have to examine the pathways from their own research towards the higher level SLOs in more detail.

### ***3. Boundaries of research responsibility***

The issue of research boundaries is an essential one considering the multiple constraints to adoption and success. Because most of those constraints cannot be solved through research outputs alone, there is always a temptation for Centers and Programs to get directly involved in the broader development linkages in an attempt to move their research findings further towards end-users, particularly as showing impact is an imperative for these research organizations. CRPs need to distinguish research on agriculture from research on adoption of agricultural practices and to identify clearly the hypotheses and likely outcomes from program research. Careful consideration of the role of partners in this process is essential.

Among the CRPs there are a range of practices from almost no acknowledgement of end-users to engaging them from the outset. The authors do not suggest a limit to the boundary although they recognize that the CGIAR institutions are part of a chain. However, as examples, they highlight cases of participatory engagement with the end-users of research, and engagement in policy discourse. These two levels of analysis and engagement, at the level where developmental outcomes and changes are expected, are elaborated in the report.

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<sup>5</sup> The title of the 2013 SF, *Nutrition and health outcomes: targets for agricultural research* is precisely designed to air the evidence and hypotheses to explore the mechanisms of change. This follows from the 2011 SF on *The agriculture and environment nexus* which revealed some of the congruence and trade-offs between the agricultural productivity and environmental outcomes.

The ISPC considers that defining or hypothesizing specific causality and mechanisms of change, and sharpening the underlying assumptions behind them, will help delineation of the impact pathways all the way to the development end. This will include identifying “who does what”, without the need for CRPs to be engaged directly in the development activities. This in turn can inform the program design. In the ISPC’s view, more emphasis, (than described in the think piece), should be put on the role and capacities of the regional and national organizations that are often primary partners and beneficiaries of the CGIAR research and that are responsible for most adaptive or additional research that produces locally relevant outputs engaging with other local actors. In fact, the nature of partnerships deserves more analysis. The additionality and complementarity needed from an array of partners and stakeholders, and whether partners have funding for their activities, are important factors if we are to expect development outcomes, no matter how carefully the theory-based design and monitoring of the program is constructed.

#### ***4. End-user and policy analyses***

The authors identify two critical levels at which analysis is essential for informing the TOC on the constraints to, and drivers of, the desired change for successful uptake and outcomes of research; namely (i) policy analysis and engagement with the policy environment, and, (ii) analysis of the end-users (particularly farmers), including access, demand and capacity, and the social processes required for user engagement .

The paper identifies several examples of good practice in the CRP proposals, which include elaboration of explicit “impact strategies” that involve engagement with policy and practitioner communities at the outset. This is useful but still too generic, and the authors (highlighting some examples) emphasize the importance of understanding and stating the preconditions for policy engagement, and using analysis of the policy context in program design. Only then can a CRP show how partnerships and capacity building lead to outcomes. Importantly, the document emphasizes that statements of awareness of the importance of policy, or the assumption that governments will internalize appropriate policies, do not guarantee that the policy environment works. Furthermore, the authors suggest that provoking a change in the policy discourse may be even more important than a change in a policy, and this is identified in some CRPs. The means by which this might be brought about should be considered.

In the document, farmers are considered as a key user group. This is appropriate as the benefits to others, for instance consumers or laborers, require farmer uptake. The ISPC emphasizes that gender needs to be an integral part of farmer analysis and engagement, rather than a separate consideration. Gender strategies and analyses also reveal issues of power and transformational change and, potentially, means to help address them. There are only a few examples of how the CRPs intend to use these analyses. However, several CRPs recognize the importance of social processes and emphasize the importance of access by users, although only a few elaborate on the mechanisms leading to research uptake. The authors find it surprising that several CRPs do not consider engagement with the end-users as part of their process. The ISPC agrees that while the targeted groups of end-users differ among CRPs, and the mechanisms of engagement may differ, the understanding of the user/farmer context is essential for the success of any program.

#### ***5. Power, control and influence***

Mere access to technologies is unlikely to be sufficient for sustained developmental change. According to the authors, analysis of power dynamics is needed to understand the social and



economic situations that created the current power structures and operate to maintain them. Regarding gender equity, gender disaggregated constraint analysis and activities towards empowerment of women are commended. The systems CRPs, in particular, aim at generating transformational change and all CRPs aim at addressing sustainability and equity, particularly regarding risk, vulnerability and different demographic groups. However, the authors call attention to the immensity of the task of CRPs in modifying existing power structures and call for evidence of what methods could be effective. The ISPC agrees that it is important that in developing the TOC ways around power-related barriers are identified. An example could be a CRP engaging with a subset of farmers who provide leadership in the community and help households to negotiate institutional arrangements with attention to individual community values. The ISPC appreciates the potential value of research that aims to “strengthen the rights of marginalized people”, but it is important to realize that achieving impact related to such an objective requires multiple steps and streams of mainly development work, and thus depends on development rather than research partners. In brief, the CRPs need to develop realistic theories (and time courses) of change when proposing development outcomes that require substantial social transformation.

### ***Recommendations***

This think piece contains seven main recommendations and a set of smaller, specific suggestions. The recommendations deal with: (1) incorporating non-linearity into research planning; (2) incorporating learning and iteration into the research process; (3) the need to review and update the TOCs; (4) monitoring the complex environment including counterfactuals on the impact stream; (5, 6) need for communication strategy, including analysis of the policy environment, power, control and influence on one hand, and development partners and end-users on the other hand; and (7) workplans for steering the benefits of research to the intended target groups. The main recommendations apply to all CRPs even though some CRPs have addressed these issues more thoroughly than others and some of their approaches could be seen as examples of good practice.

All of the above recommendations relate to the key attribute of a TOC, namely, that it should be an underpinning concept which is thoroughly constructed and regularly revisited during the life-time of the program. The ISPC emphasizes that given the size and complexity of the CRPs each major impact pathway will require a specific TOC to be developed and updated. The TOCs should identify the mechanisms of change and how the program activities can influence those changes, based on evidence and testable hypotheses. They should be updated as new information from monitoring, feed-back and accumulated evidence becomes available. This component of planning and revision should become part of regular program evaluations as it reveals issues of management, partnership strategies, program-centric planning and its quality.

In the ISPC’s view this think piece frames a debate on many key issues that the research community continuously struggles with. If done carefully, TOCs can help to broaden and deepen the understanding of impact pathways and to rationalize the claims of programs for future impact. They can thus be a powerful tool for building teams and directing resources and efforts. The ISPC supports the recommendation of the commissioned authors that there is scope in all CRPs to improve the description of their TOC and the associated impact pathways. The recommendation should stimulate collective enhancement of research design and sharing of good approaches among the CRPs and across the Consortium.

## ANNEX 1

# THEORIES OF CHANGE AND IMPACT PATHWAYS

## CROSS-CUTTING ANALYSIS OF THE 15 CGIAR RESEARCH PROGRAMS

Dr SJ Batchelor, Dr RL Goodman, Institute of Development Studies & Gamos.  
Final version. 24/09/2012

An analysis regarding the quality and adequacy of the theories of change and impact pathways of the 15 CGIAR Research Programs (CRPs) for linking the proposed research activities to the CGIAR high level impact goals captured in the following four System Level Outcomes: Reduction of rural poverty, Increase in food security, Improving nutrition and health, and More sustainable management of natural resources.

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### 1 INTRODUCTION

The CGIAR's four System level outcomes (SLOs), written in development terms, provide the goals for a CGIAR portfolio of *research for development* programs. In its White paper (2012), the ISPC seeks to assist the CRPs to articulate the critical links between research results and development outcomes (SLOs) through a prioritized set of intermediate development outcomes (IDOs). The IDOs are seen in terms of the System level (aggregation across production systems, value chains, and agroecosystems) and the CRP level (targeting specific research thrusts; individual crops or cropping systems, value chains, and agroecosystems). The ISPC believes that moving towards a comprehensive Strategy and Results Framework (SRF) needs to be an iterative process of prioritizing and developing the IDOs at the System and CRP levels. At the CRP level, alignment with the SRF is said to be supported by developing a prioritized research agenda based on feasible and scientifically sound impact pathways that articulate a plan of delivery from research outcomes to the IDOs. The conceptualization and proposals presented are supported by experiences drawn from prioritization approaches previously used at the CGIAR system and Center levels, and from lessons learned from priority-setting and decision-making approaches used by other research agencies and organizations.

The majority of the 15 CRPs have initially conducted a considerable amount of on-going research under contractual obligations. It is expected that over a brief period of transition, the programs will evolve towards better alignment with the Strategy and Results Framework that sets the high level objectives for research. The theories of change form a core justification for each CRP and its major components. The program proposals were expected to contain a complete description of the plausible impact pathway or multiple impact pathways indicating the intermediate changes

(outcomes) towards impacts of the four high level goals. The estimated benefits were expected to be based on a credible theory of change specific to the field of research.

This report presents the conclusions drawn from analyzing extracts of impact pathways and theory of change from the 15 CRP proposals (as at July 2012). The analysis contains:-

- assessment on the thoroughness and degree of realism demonstrated in the impact pathway descriptions regarding the constraining and facilitating factors on which success for outcomes and impacts may depend.
- comments on the CRP milestones described by the programs as they relate to the mechanisms of change.
- recommendations on how the alignment from program activities to the SLOs might be improved.

Where possible, we cite examples of impact pathways that are realistic and plausible and also highlight common aspects where the CRPs are currently lacking with regard to the theories of change.

## 1.1 CORE DOCUMENTATION

The analysis drew on extracts of relevant sections of the 15 CRP proposals and the ISPC's assessments of the CRPs (ISPC 2012):-

- CRP1.1 Dryland systems July 2011 (approved for inception phase)
- CRP1.2 Humid tropics systems January 2012 (approved with conditions)
- CRP1.3 Aquatic agricultural systems March 2011 (approved)
- CRP2 Policies, institutions and markets October 2011 (approved)
- CRP3.1 WHEAT August 2011 (approved)
- CRP3.2 MAIZE June 2011 (approved)
- CRP3.3 Rice (GRiSP) September 2010 (approved)
- CRP3.4 Roots, tubers and banana September 2011 (approved)
- CRP3.5 Grain legumes February 2012 (approved with conditions)
- CRP3.6 Dryland cereals February 2012 (approved with conditions)
- CRP3.7 Meat, milk and fish March 2011 (approved)
- CRP4 Nutrition and health October 2011 (approved)
- CRP5 Water, land and ecosystems September 2011 (approved)
- CRP6 Forests, trees and agroforestry February 2011 (approved)
- CRP7 Climate change January 2011 (approved)
- ISPC Priority-setting White paper (ISPC 2012)
- A compilation of milestones and outcomes as listed in the CRP proposals was also available.
- The original program documents and the CGIAR's Strategy and Results Framework.

## 2 ASSUMPTIONS AND BACKGROUND

The essence of this task concerns logic models, impact pathways and theories of change. Before proceeding on the detailed analysis there is a need to ensure that these words are being used with a common understanding.

Much has been written on each, but in the following we attempt to describe our understanding as it relates to this task.

**Logic models** – Since its debut over thirty years ago, the logical model approach and its product, the logic framework, has become a popular fixture in the development sector. Evolving slightly over three decades of mainstream use, logic models typically consists of a listing of

- outputs (the product from activity delivered, e.g. how many people received training)
- outcomes (the change that occurs as a result of the activity within the lifetime of the programme, until recently also called variously objective or purpose, e.g. farmers are able to use new technology to grow crops,)
- impacts (what will the end result be in the wider context, e.g. farmers use new technology to increasing productivity in crop growing, also called goal).

In its classic form the logical model does not provide insight into causality, that is, **why** a given output would lead to a given outcome and, in turn, a given impact.

**Impact pathways** – the language and concepts of impact pathways build on the logic model. As a planning tool they describe the intended chain of events in slightly more detail to show the contribution of each activity or action on its path to impact. They often extend the logic beyond the programme of intervention (i.e. unpacking the link between outcome and impact in a traditional logic model). The language of ‘impact pathways’ has been helpful over and above logic models as it has drawn attention to the outcomes and impact – the logic models often get bogged down in the detail of the activity and outputs. This has been particularly useful in research as it has drawn the researchers’ attention to the ultimate use of their research rather than the details of their work itself.

**‘Theory of Change’** – although the idea of theories of change has been around for decades, the language and ideas of a Theory of Change (TOC) has gained mainstream ground in development circles in the last 5 years. There is a growing literature of opinion on how to do theories of change (or drivers of change) and what constitutes their essential components but a single method/presentation agreed among the research/development community is yet to emerge. Because of this lack of consensus, theories of change tend to vary considerably in the extent they differ from a logic model, from a few annotations to a clear explanation of the mechanisms of change expected within the programme. Although TOC has its roots in the logic model approach, the TOC differs from the classic logic model by questioning the assumptions<sup>6</sup> underlying the relationship between a given output/outcome and impact and (to us the most important aspect) **the explicit identification of the mechanisms by which change is expected to occur.**

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<sup>6</sup> Even the word ‘assumptions’ can create difficulties. The Logical Framework asked for assumptions and risk in its fourth column but, rather than referring to the causality of the process, it instead asked for items that were outside the control of the programme, such as ‘that the government gives permission’. For this reason we prefer to talk about mechanisms of change, by which we mean the assumptions around causality.

There are two potential elements of a TOC that we would want to discuss at this point: complexity and causality; and presentations and diagrams.

## 2.1 COMPLEXITY AND CAUSALITY

The first element is that within international development research, as people become increasingly aware of complexity, linear logic models are being challenged. Is there a single pathway through a complex landscape? The simple logic often presented for research programmes, that is, researchers produce product X, that product will be used and then replicated and that this results in change in a complex social environment, is quite simply challenged by the complexity of the real world. Product X is rarely created as is stated on the planning document. Programmes of activity have to change over the years and to adapt to the emerging value chain. Unexpected events may change, nuance or enhance the direction of the programme and unexpected outcomes may change the value of the product. Although most logic model planning documents say that the logic model is a 'living document' and will be revisited during the programme, the old linear logic model rarely captured the feedback loops and alternative pathways a programme of work needs to be adaptive to the wider context.

A good 'Theory of Change' addresses this complexity. We have said that the TOC is characterized by its **emphasis on the causal processes that create the change**. The TOC describes the processes by which the change might happen. While the logical framework implicitly states the logical causal chain of events that create change (and, on the rare occasion, provide the causal assumptions in the accompanying proposal narrative) they do not explicitly state those causes. Without explicit statements, how can the theory around the causes of change be tested?

TOC differentiates itself from a logical framework by placing emphasis much more on a causal theory. The resulting document is therefore a theory about a landscape rather than a roadmap. The pressure to go back and adjust the theory based on what you learn is much more embedded in the process. While we have acknowledged above that logic models need to be revisited, and should be living, they often are not. The strength of a Theory of Change can be that the explicit statements about the causal processes (processes that are thought to be true regardless of the programme) can be tested throughout the programme life and the strategy adjusted accordingly thus enabling navigation through a complex landscape.

## 2.2 PRESENTATIONS AND DIAGRAMS

The second element is to acknowledge that, given this attempt to capture complexity, unlike the logic models, there is currently no single trending format for a 'Theory of Change'. It may take many shapes and forms such as a narrative storyline, a set of linked statements, something like a problem tree, or a sequence of steps. This is currently its strength; since it does not have a set of boxes that people can fill in, constructing a TOC often makes people *think*.

It is possible therefore to move away from a linear logic model and present a 'Theory of Change' in a nonlinear way. This also moves away from the idea of an impact pathway to, let's say, an impact landscape. For instance, A discussion paper by Hivos<sup>7</sup> (Guijt and Retolaza, 2012) view the Theory of Change as involving dimensions of change and identify the following 5 dimensions: 1) The actors<sup>8</sup>

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<sup>7</sup> Humanist Institute of Development Cooperation

<sup>8</sup> Both Hivos and ourselves, use the term 'actor' to refer to those individuals or groups who are trying to bring about change. Actors may be from a variety of backgrounds - public sector (governance), private sector or civil society (e.g., NGOs) - but through various routes and interactions the knowledge, attitudes and actions of these individuals and groups lead to developmental outcomes. Stakeholder is a more commonly used term, but can restrict the thinking to only those directly influencing programmes rather than those important to the wider remit of a programme of work.

(individuals or groups) who are trying to bring about change; 2) The context or situation that influences the actors and which they are trying to change; 3) The ideas or theories that influence the actors when they consider how to act in a certain situation; 4) The strategic plan that describes the reasons and provides a framework for taking particular action; and 5) The reflection and decision-making processes that help actors to develop strategy, review success and failure and make improvements to ideas and strategies.

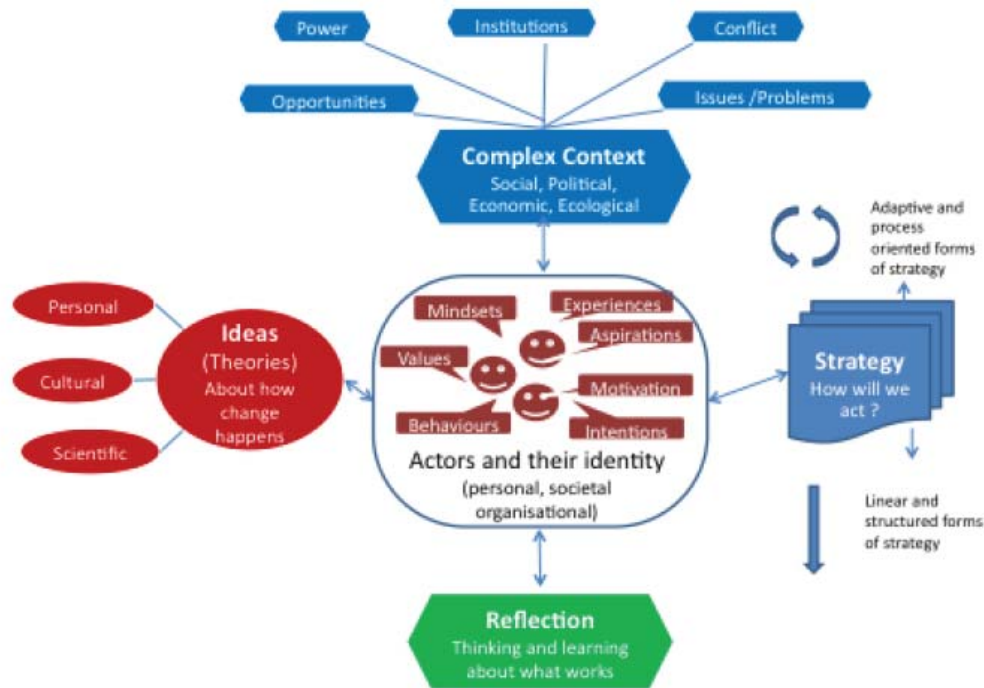


Figure 1 Reproduced from Guijt and Retolaza, (2012)

This lack of a single expression of TOC is both its strength and weakness. It makes people think – a strength - but it also leaves some people confused between Theory of Change and logic.

With these ideas in mind we sought to consider the CRP extracts and proposals.

### 3 CHALLENGES THAT NEED TO BE FACED

Given the lack of consensus about what a TOC actually looks like, we start with a section reflecting on what a ‘Theory of Change’ for a CRP might include, and how it could enhance a logic model or impact pathway.

#### 3.1 LINEAR MODELS

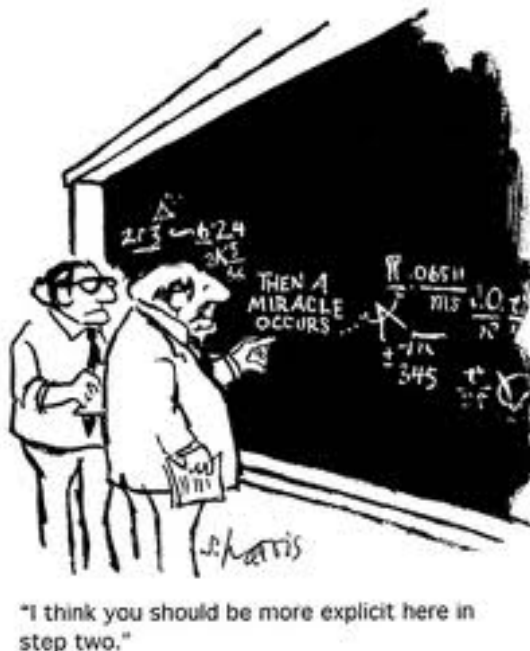
As stated above there has been growing pushback against the linear logic of the logic model. The world is said to be a complex place, and that most changes and gains in this world are made with feedback loops, and an iterative path of action. The benefit of a logic model is that it seems predictive, and can be understood as a table or diagram without the complexity that obscures the

route that the programme intends to take. However, as discussed above, to include iteration and adaptation to a changing complex world it therefore needs to be a 'living document'.

How then could CRPs capture complexity? The evolution of a simple logic model has sometimes included presenting a long list of possible activities within a single category (of, say, outcomes). By this, the proposer is seeking to present the idea that a single linear path through the logic is unlikely and that there will be multiple paths. Although these models have introduced multiple paths, they rarely acknowledge the iterative nature of the paths – with the exception of a feedback arrow. Once feedback arrows are included in diagrams they often become difficult to read and unwieldy. We were curious to identify how the CRPs had captured complexity and iteration.

### 3.2 MECHANISMS OF CHANGE.

The language and ideas of a Theory of Change was, in our view, introduced to unpack the mechanisms of change that the logic models referred to as underlying causal assumptions. A cartoon has been commonly used to illustrate this.



These leaps of logic were not specifically articulated, leading to three distinct difficulties.

**First**, the model is not evidence based. Any mechanism of change proposed by any programme, should have some evidence to suggest that the mechanism will work. Take the following statements: Clean water improves child health, vaccinations result in lower susceptibility to disease. Both these statements are 'true' but have enormous assumptions behind them. Indeed, they are only 'true' if many other control and environmental factors are in place. As soon as we say 'vaccinations lower susceptibility to disease' health professionals will ask questions - which vaccinations, which diseases, what age are you administering the vaccination, has the cold chain been in place, what about side effects? A logic model might state that making vaccines available for 100,000 children will lead to 'improved child health'. Without unpacking the assumptions behind this, however, the statements are valuable for approving funding but less so for guiding the programme.

Of course we exaggerate to make the point and logic models are more nuanced than this example. However, it is only when the mechanism of change is stated explicitly that we are able to test the evidence behind the assumption ‘Do vaccines lower susceptibility?’ The answer lies in the details. So, a vaccine may lower susceptibility but only under these conditions, these drugs, these parameters for the child and these environmental factors.

**Second**, mechanisms of change are true regardless of a programme of intervention. They should be evidence based mechanisms tested by various (let’s call it mixed method) research methodology. The controlled trials of the vaccines provide evidence completely independently of whether someone commissions to undertake a vaccine programme in a specific country. The need for a solid cold chain is a truth outside of programme logic.

So, the mechanisms of change articulated on a TOC associated with a program of work are drawn from the global body of research on what works and what does not.

At this point some readers will be thinking that the CGIAR is all about research and that therefore the mechanisms of change are known and explicit in almost everything that is written. However, while much is stated about the mechanisms of developing new hybrids or analyzing farming systems, less is explicitly stated about research uptake and the mechanisms of change by which the new agricultural product gets adopted by a farmer. These ‘development outcomes’ are often presented as beyond the remit of the institution. Some of the narratives in some of the CRPs acknowledge that involving stakeholders in the research is a key foundation to uptake. There is a body of work on innovation and research uptake that could be drawn on. An explicit statement about the mechanisms of change that enable the outputs of the research to become a reality in the lives of the target audience would enable that mechanism to be tested against research uptake literature, against policy change research or against innovation research.

**Third**, if the mechanism of change is not articulated then it is difficult to determine whether the programme could be more effective if it employed a different mechanism of change. Take, for instance, our child health example above. We are about to spend our limited health budget on vaccinating 100,000 children but, is this the best use of our budget? What other mechanisms are there for improving child health? Would we make more effective use of our funding if we applied ourselves to another course of action?

More explicit theories of change enable decision makers to assess more closely the course of action as well as consider alternative courses of action.

### 3.3 BOUNDARIES OF RESEARCH RESPONSIBILITY

In any programme it is difficult to present the boundary of that programme. Again we return to the idea of complexity. It has probably never actually been the case that research was conducted in isolation from the ‘real world’, however, some decades ago there was a feeling that research could be conducted in controlled conditions and then brought out into the ‘real world’. The practical and utility research that the CGIAR system prides itself in needs to engage with the ‘real world’ as the research is conducted. This tends to take shape in two particular ways.

First, there is often a need to engage with a representative sample of the end users to ensure that new hybrids or practices fit the ‘real world’ farming systems. This may range from participatory selection of seeds to, say, participatory trials, farmers explaining the farming systems to, say, farmers explaining the value chain or their complex social family life (time available for working on the crops). Participatory engagement with the end users often enhances the research, but can also



be overlapping with, and be a prelude to, research uptake. For some research, the engagement with the end user may be delegated to or through development partners. All of this 'participation' raises questions about what are the boundary responsibilities of the research to engage with the end user, and, in terms of a TOC, what are the mechanisms by which participatory engagement of end users in research is successful? To exaggerate the point on mechanisms, if farmers are invited to a five star hotel and given a PowerPoint presentation, and then asked to comment, is this as effective a mechanism of change as inviting farmers to stand around a demonstration plot and discuss their impressions. What are the effective mechanisms of change for end users to engage with the research as it is being undertaken?

Second, there are the actors at the boundary of the research who might take the research forward. At some point research that has led to successful product development will need to go to scale. This will involve engaging with development partners specifically to work with the product and most likely engage with the policy and perhaps private sector domains to ensure that policies and value chains are in place for the uptake of the research. Current research on how policy changes includes strong statements about engaging with policy actors during their discourse and framing the debates. It includes engaging with specific Champions and taking up windows of opportunity. There are acknowledged mechanisms of change for engaging with policy and private sector domains, and most of them include elements of engaging during the research rather than just at the end. There is then impetus to identify actors and ensure they are aware of and even inform the research programme.

These thoughts lead us to ask – what are the boundaries of the research programme? Who will they be engaging with and how will they use the research process to shape and create effective mechanisms of longer term research uptake and change? How will they define the boundaries of their work?

### 3.4 POWER, CONTROL AND INFLUENCE

With this question of where is the boundary of the research responsibilities, it is worth acknowledging a trend in development literature that talks about 'influence and control'. The literature acknowledges that in any programme there are actors that can effectively be controlled (most commonly staff), and that for all other actors the programme has varying degrees of influence. For farmers engaged in research trials the programme may have a strong influence – it may use incentives to bring in their cooperation, and engaging with them regularly means that communication about the product is two way and probably effective. However, when it comes to scaling up the product, the research may be filtered through a development partner and the direct influence of the researchers on the end user farmers may be very little. Influence on the development partners may also be strong in some cases and weaker in others depending on the engagement and social networks.

This idea of degrees of influence can be helpful. It picks up on the ideas captured by the Hivos presentation of a 'Theory of Change' (as presented in section 2.2 of this paper). It discusses the actors involved and any analysis can include how important it is to engage with specific types of actors, or even specific actors.

Many proposals talk about a stakeholder analysis. In a footnote above we have already said that our personal opinion is that the word stakeholder can be misleading, particularly when examining actors at the boundaries of research responsibility. Nevertheless a 'stakeholder analysis', whatever its shape, is important.

Many stakeholder analyses are a matrix of actors concerned with the research. There is often very little analysis of the power and influence of the actors involved. Given our comments above about influence and control it is worth expanding ‘stakeholder analysis’ to include power, influence and control. Net Mapping seeks to map the influence and even the strength of influence of actors involved and in our experience can be a very useful tool. The Power cube (Gaventa 2011) suggests tools for analyzing the power of the actors involved, and we would draw attention to a recent paper on experience of using these tools (Pantazidou2012).

3.5 METHODOLOGY AND ANALYTICAL FRAMEWORK

Given the above our approach to the task was as follows. We read and considered the extracts against the above narrative.

In the light of the above challenges we refined the Terms of Reference to a framework see Table 1. This informed our examination of the CRP proposals.

**Table 1: Selected criteria for consideration in examination of CRP proposals**

Extracted key word from Terms of Reference	Challenge to be identified	Overarching question	Sub questions
Thoroughness	There is no single format for TOC, so we were open to all types of presentation	Type of presentation?	Logic model/impact pathway/Theory of Change/stakeholder map/etc?
	Linear models	Acknowledgement of linear logic?	Any mitigation of linear path? Multiple pathways? Iteration acknowledged?
Realism	Mechanisms of change	Mechanisms of change are evidenced?	Any citations? Acknowledgement of past experience/related work/
	Mechanisms of change	Acknowledgements of alternatives?	Value based comments? Consideration of alternative processes? (particularly at research uptake stage)
	Mechanisms of Change	Presents mechanisms of change?	Any use of innovation theories, on research uptake, built in stakeholder engagement early on, acknowledges complex policy environment, etc?
Constraining and facilitating factors	Boundaries of research responsibility and Power, Influence and Control	Acknowledgement of farmer environment?	Does the CRP specifically acknowledge the farmer/end user?
	Boundaries of research responsibility and Power, Influence and Control	Acknowledgement of policy environment?	Does the CRP specifically acknowledge the policy environment and state how they are intending to engage with it?
Milestones	Boundaries of research responsibility	Beyond research production?	Any milestones of discourse, debate, convening?

Alignment from program activities to the SLOs	Boundaries of research responsibility	Acknowledgement of being part of a larger whole?	Do they acknowledge their connections with other CRP and outside the CGIAR system?
	Boundaries of research responsibility	Acknowledgement of global context?	Are their CRP limited to some geographies or are they global in view?

In the following section we have taken some of the key questions the matrix raised and present a narrative overview from the findings from the CRPs.

## 4 FINDINGS

### 4.1 THOROUGHNESS

#### **Do some of the CRPs suggest ways of overcoming the linear nature of proposals?**

Our scan suggests that the CRP presentations fall into three categories.

#### **1. Those that present something linear and do not mention that their work may not be linear**

For instance, CRP3.3 presents an impact pathways model without an acknowledgement of its limitations. Similarly, CRP 3.5, 3.7 and 4 do not appear to acknowledge the linear logic. Within this category, some CRPs (e.g. CRP 3.1) show some recognition of the complexity of impact pathways but do not go as far as to acknowledge that pathways are not linear. For example, CRP 3.1 notes that “the research to impact pathway involves several immediate steps and, although not depicted in Fig.7, an intervention can potentially have multiple outputs, outcomes and impacts.” (Point 5: Impact Pathway).

#### **2. Those that present something linear but acknowledge that the linearity might not be the best approach.**

Within several of the CRP proposals provided there was an explicit recognition on the non-linearity of pathways to impact. For instance, CRP 1.1 acknowledges that “In their 2003 paper on impact pathway evaluation, Douthwaite et al. (2003) emphasise the non-linearity of agricultural change and propose that CGIAR evaluation methods should account for this.” CRP 1.1 makes explicit their understanding of the limitations of linear models when they acknowledge that ‘Whether the ability to insure livestock against drought will lead to households to accumulate more animals or to keep fewer animals and invest more in each animal is essentially an empirical question. Depending on the circumstances either option could be rational for an individual, but their implications for the environment could be very different.’ Despite their acknowledgement of non-linearity, however, the figures provided by CRP 1.1 continue to reflect a linear approach.

CRP 5, like 1.1, acknowledges the work of Douthwaite et al (2003) and the nonlinearity of research to action work. They provide text for individual theories of changes covering specific components of the research as well as text describing the impact pathways for each research component. However, although they have attempted to consider multiple pathways, they end up with a diagram representing the program-level Theory of Change (Figure 3.2) which is not very informative and reads like an linear impact pathway model but with boxes instead of columns; and importantly does not (meaningfully) identify the mechanisms of change.

Within the other CRP proposals, CRP 3.6 acknowledges that impact pathways are nonlinear and that feedback loops and multiplicity or roles of those involved in the process are always present. CRP 6 also acknowledges the limitations and states explicitly ‘that the linear representations provided in the impact pathway models are intended to be illustrative only and that linear models do not always

reflect that a single outcome can generate multiple impacts, that impacts may be amplified by partnerships created across multiple channels and governance levels, and that learning and feedback can lead to changes in methodologies and problem analysis.’ They have presented linear models and placed this caveat. Similarly CRP 7 presents a linear impact model but with the acknowledgement that pre-determined linear pathways to impact are the exception rather than the rule. The CRPs state that they are in a position to take advantage of opportunities that emerge from outcomes.

What is most apparent about the CRPs in this category is that while there is clear acknowledgement of the non-linearity in the pathway from activities to impacts, the models produced by the CRPs are still linear. This inconsistency indicates that the CRPs do not know how to represent their research in a non-linear way. This raises a key issue - how do CRPs represent non-linear pathways? There are a number of actor orientated maps, and even domain mapping, but they are often dissatisfying to the management because they fail to show the anticipated change in the actor or domain.

### **3. Those that seek to represent something non-linear (in diagram or text).**

While representing research in a non-linear form presents challenges, some CRPs did seek to represent something non-linear either in diagram or text. For example, in CRP 3.2 the identification of impact pathways is accompanied by acknowledgement that pathways are dynamic and regularly revised. They are influenced by partners and evolve at different speeds in different countries even within the same region.

What we find then are writers struggling with the idea of a linear chain of events. Even where they acknowledge the limitations of a linear impact pathway model, they struggle to present alternatives. They are not alone in this dilemma. The sector is struggling with the ideas of complexity and non-linear pathways to development. In a recent discussion with DFID, it has been proposed that some overarching work on this area is needed.

## **4.2 REALISM**

### **Are there general mechanisms of change that some CRPs suggest and that others may adopt?**

We said in the introduction that our understanding is that behind theories of change is the idea that there are specific mechanisms of change that can be evidenced almost independently of the programme of activities. In this section we explore the extent to which extracts provide insight into explicit mechanisms of change that the CRPs are subscribing to.

**How do things change?** There was indication within some of the CRP proposals of a move towards thinking about the mechanisms by which change occurs. For example, CRP 7, within a figure to illustrate the impact pathway for empowering national and regional stakeholders for meeting the adaptation and mitigation challenges to agriculture under climate change in India, includes a ‘How?’ box to document *how* they see the change coming about. Although the CRP 7 ‘Generic impact pathway’ does not say why the outcomes identified shape the impacts to which they are linked in the diagram they do place an emphasis on iterative reflection and learning and the presence of the ‘How?’ box is at least a sign that the mechanisms of change are being considered.

In the White paper (ISPC 2012) notes “Planning of feasible impact pathways should be explicit showing the “cause and effect” of the research outcomes in the overall change process.”

**Iterative learning** is a theme for a number of the CRPs. For example, CRP 5 is explicit in their recognition that pathways to influence will change and evolve and that the Theory of Change will be

modified as appropriate. While there is little detail of how that iterative learning is embedded in CRP 5, this may be covered in other institutional workplans.

**Evidencing the pathway to IMPACT.** The linkage between onsite trials and uptake in dry production ecologies is presented as a 'fact' in the CRP 3.6 narrative, although evidence of this is not cited. Since they state that yields can be 'two to four times higher', we are fairly sure that they have specific evidence for this statement. This raises the question then – how much evidence does a proposal or plan need to justify the TOC. Should all CRPs provide referenced evidence for the mechanisms of change, or is it ok to make unevidenced statements, leaving the reader to trust that the writer has evidence if challenged. If evidence is provided, it justifies a mechanism of change and leads into the methodology and framework for monitoring whether the mechanism is being applied and working within the new context. If no evidence is given, there is no explicit set of parameters set for monitoring whether that mechanism is working, and therefore some explicit framing of the mechanism is needed. In either case a process for testing the mechanism of change over time could be put in place.

Since the heart of the CGIAR is that research provides evidence from which policy makers, development partners and end user make decisions, how much should these documents be evidenced by wider research on research uptake processes and other mechanisms of change?

**Drivers of Change.** In the impact pathway models provided for each of the 6 strategic learning objectives in CRP 3.5, the CRP describes 'Drivers of Change'. To do this the CRP draws on previous similar work to provide evidence for their approach highlighting factors identified in previous research as key for the successful adoption (e.g., participatory methods) and differences between contexts in success/which components of a package were adopted. However, the drivers are a little general and it is not clear how they can really be described as mechanisms of change. What is brought out by this CRP is the best practice to explicitly state the drivers and barriers of change. There is much debate in the research community about the transferability of research. It is vital that the contextual controlling factors be documented as a part of the research if research is to move from one space (both locations and domains) to another. Examples of control factors that are beyond control of the researcher but need to be monitored and perhaps intentionally influenced, includes:- sensitive institutional and political issues governing allocation and management of water resources (CRP 5); requirement of major changes in infrastructure, extension, incentive systems, investment, capacity and policy at local level (CRP 3.6); how one can achieve impacts in a system with poor extension, high risks and marginal growing conditions (CRP 3.5).

**Communication strategies.** Knowledge products are, of course, part of policy engagement and to some extent user engagement through development partners,. Traditionally these have been high quality journal papers, but it is increasingly recognized that research uptake is facilitated by broader communication strategies with multiple products (and convening spaces). There is a growing body of evidence generally about what works in communication of research. CRP 2 makes explicit mention of this. Key stakeholders, 'including representatives of community groups, local government officials, and a range of CGIAR partners, from donors to development organizations' will be engaged for feedback at initial research design stage. They have an emphasis on the role of the media and general public in research uptake and talk of making knowledge products accessible to those in developing countries through open access. They also plan to undertake 'capacity building through direct engagement and other materials' although it is not clear whether this is to include information literacy and actually increasing the demand for these knowledge products.

Some suggest in their milestones that their contribution will depend on their communication strategies. CRP 7 for instance recognises that it is not just the quality of research that matters when

it comes to R4D but that ‘attention to partnership development, scaling up, cross-disciplinarily, capacity enhancement and enabling governance and policy’ also play a role. The CRP perceives research uptake to be fostered by ‘a combination of direct participation, aggressive outreach, and knowledge sharing platforms’. This reaching out, ensuring the boundaries of the research include ‘partnership development’ and ‘knowledge sharing’ can also be seen in CRP 4. They note that better evidence is not sufficient for achieving policy impacts and that an effective communication strategy is necessary. Likewise CRP 3.5 ensures its contributions to the SLOs through a thorough communication strategy. So, beyond the creation of an enabling environment for farmers, the CRP will work with governments, educational institutions and developmental organizations towards educating consumers about the nutritional value of crops – they refer to an ‘awareness trend’ which is building momentum in South Asia and has potential in Africa.

The question of stakeholder engagement is explored in more detail in the section below.

### 4.3 CONSTRAINING AND FACILITATING FACTORS

#### **Research Boundaries and Impact?**

All mission oriented research should be useful. When CGIAR talks about ‘Impact’ in its SLO, it makes explicit the idea that the CGIAR research changes the world in some specific ways.

However, does it always lie as a responsibility of the researcher to ensure this usefulness? Are they part of a chain—and where is the boundary? In our recent discussions we have identified that different research requires a different response. Systematic reviews for instance may not need stakeholder engagement by the researcher to make them useful to the policy actor. The review can be carried out and published, and policy advocacy on its usefulness could be carried out by someone else.

On the other hand participatory farmer research, by definition, requires the researcher to engage with farmers, and the ongoing use and value of the research is often associated with the strength of that engagement. As CRP 3.5 states ‘Along with development and delivery of outputs, effective partnerships in achieving outcomes, engagement with smallholder legume farmers in Asia, Africa and Latin America was identified as one of the three major processes in the impact pathway.’ Similarly, in CRP 5, it is proposed that farmer engagement with local development farmers, as part of a participatory approach as they move toward improving their agronomic practices, will raise attention to individual and community values, and empower households to engage with relevant authorities to negotiate institutional arrangements.

CRP 5 also plans a participatory approach to their research. For example, in the Theory of Change for irrigated systems, ‘politicians and representatives of key interest groups, including the vulnerable and the marginalized, will be engaged as members of our research teams to bring on board key influencers in irrigation management and give a platform for implementation’. Presuming that ‘the vulnerable and the marginalized’ refers to farmers/local people this sounds like the CRP plans to engage farmers/local people from the outset. However this also picks up on the idea of influence, stating clearly that they are engaging with ‘influencers’ in order to ensure the research uptake.

This comment on influence suggests, as discussed above in Research Boundaries, that sometimes engagement with Policy actors during the research is important. For example, for CRP 4, engagement at the policy level is important. The CRP views the engagement of policy makers and national governments in evidence-based process as critical to success of program. The extract provided suggests an in-depth knowledge of the policy environment, e.g., the CAADP process in Africa linking regional policy processes to national level policies and implementation plans.

The White paper (ISPC 2012) notes the importance of stakeholder engagement:- ‘The realization of IDOs is, however, not under control of the CRPs and depends on multiple, often iterative steps conducted by other players and necessarily with substantial additional investment.’ They add :- ‘The CRPs need to consider the extent to which to involve development partners and, for example, policy makers and end-users in research planning.’

So in order to consider the constraints and drivers of the proposals, we consider the two main possible engagements – policy actors and end users.

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#### 4.3.1 DO CRPS INCLUDE POLICY ANALYSIS?

**Policy engagement** is a key element of successful research uptake and there were some examples with the CRP proposals of **how** CRPs will engage with the policy environment. For instance CRP 6 presents an Overall Impact Pathways model. The model is comprised of four columns entitled theme, impact strategies, outcomes and impacts. The inclusion of an ‘impact strategies’ column illustrates that the CRP has shown consideration of the mechanisms for change, e.g., ‘research approaches that engage policy and practitioner communities at the outset’. However, they do not state ‘how’ the approaches engage the communities, nor do they identify which approaches constitute best practice. In contrast, CRP 5 gives an evidenced based ‘how’ example of change when they state ‘Water resources can be reserved for environmental flows and research can examine the consequences of that for other water users. The recent introduction of these concepts into discourse on the National River Linking Plan in India was the result of good science and the ‘right’ relationships that jointly ensured a positive impact’. This is important – this latter example states some of the preconditions for policy engagement (including changing the discourse and framing the debate). While CRP 7 notes the importance of the partners and stakeholders in achieving the goals, it does not say under what conditions the relationship with the partners will be ‘fruitful’. Hence the ISPC assessment criticizes the CRP asking the question of ‘how’ the relationship and engagement will lead to the SLO. ‘The proposal seems to depend mainly on assertions at this stage about the importance of partnerships and capacity building – without convincingly describing how this leads to outcomes and impacts on policies. This is an intangible element and will need to be kept constantly under review and fine tuned as the program develops over the longer term.’ This draws us back to the causal mechanisms of change and the analysis of power influence and control. An analysis of stakeholders, a mapping exercise, on its own is of little use. It is the subsequent planned engagement with the key stakeholders, and the use of previously documented good practice in communication that will result in the uptake of the research into the policy domain (plus windows of opportunity and probably a lot of time).

Across the proposals we see a spectrum of approaches with regard to CRPs in terms of their knowledge of the policy environment, how they plan to engage with the policy environment and the perceived importance of such engagement for the success of the research program. While some do not mention the policy environment we can also see specific action proposed by say CRP 1.2, through to the passive approach of CRP 3.2. Regarding the processes of embedding engagement with policy actors and end users, CRP 1.3 is explicit in the intended shift from research that is carried out and then disseminated, i.e., dissemination that happens as a second stage once the research product has been created, toward “research that is embedded within ongoing processes of development and change”

Many of the CRPs are explicit in their acknowledgement of the importance of engaging with the policy environment for research uptake. Similarly, CRP 4 views the engagement of policy makers and national governments in evidence-based process as critical to success of program. Indeed, for some CRPs, analysis of the policy context was used to inform research design. Additionally, for CRP 2, the

research themes chosen were decided after ‘analysis of developmental challenges in different types of countries and a priority-setting consultation with key stakeholders’. By linking with CRP 2 CRP 1.3 plans to utilize knowledge of the policy environment, drawing on lessons regarding macro-level policy reforms and innovation, to inform their approach.

With regard to the detail of policy environment knowledge, some CRPs illustrated expert knowledge of the policy context. For instance, CRP 3.7 sees the policy environment as key stating a goal of ‘supporting the establishment of enabling pro-poor policy and institutional environments’ but their knowledge of the policy environment and, in turn, how they will engage with it is appears less detailed. CRP 4, however, describes the CAADP process in Africa linking regional policy processes to national level policies and implementation plans. Similarly, CRP 5 acknowledges the importance of engaging ‘community representatives, donors, public officials’ as well as ‘build strong links within the CAADP process and other regional policy and investment initiatives’ from the outset. This sort of detailed knowledge is likely to increase the proficiency by which CRPs can engage with the policy environment.

The question is when researchers should begin their engagement with the policy environment. For some CRPs, the recognition that policy contexts should be considered from the very beginning in order to increase the likelihood that the research program will have the desired impact, is strongly emphasized. For instance, CRP 1.1 states a hypothesis that those research projects that engage with policy makers and policy processes from the outset and maintain this engagement throughout the life of the project have increased chance of influencing policy compared to projects who only share results at the end. CRP 1.2 plans to determine the policy context in advance of priority setting and to engage development partners from the beginning.

While many CRPs see their work as inclusive of policy ‘influence/activism/engagement’, in other cases CRPs appear to take a more passive approach. For instance, CRP 3.2 assumptions include: ‘governments and development partners internalize the gender-sensitive and pro-poor policy recommendations and institutional innovations that promote equitable access to technologies, inputs and services’ and ‘policies supporting streamlined and accelerated variety release across regions and low-cost seed options will be implemented by governments’. A question here would be whether the policy environment actually works in this way and whether a more nuanced view is required.

In the milestones we find some examples focused on the policy environment. For example CRP 2 has ‘Design of policies, strategies, and capacity-building materials for resource-efficient technologies; Platforms and other collaborative mechanisms for promoting neglected and underutilized species; Decision-support tools for policymakers on strategies for sustainable intensification of agriculture.’ However, again these ideas are not unpacked in explicit detail.

Policy change is not simply a matter of actually changing policy. It can often have more of a ‘policy’ effect if the discourse is changed – and practice often precedes actual policy change. When we talk about engaging the policy environment, we include the ideas of picking up on windows of opportunity, changing the discourse, reframing the debate.

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### 4.3.2 DO CRPS INCLUDE FARMER/CONSUMER ANALYSIS

**User engagement** - Access to ‘social processes’ is often identified in international development research as a path to user engagement. Access can only play a role, however, and on its own will rarely be sufficient for generating user engagement. CRP 4, for instance, does acknowledge that it is not just an increase in access that is required but also an increase in demand. They show recognition



of the role of social processes in creating innovation but do not identify the mechanisms by which this happens. At least in their case in component 4: Integrated Agriculture, Nutrition, and Health Programs and Policies CRP 4 acknowledges a dearth of ‘hard evidence’ to support the idea that joint action (i.e. agriculture working together with nutrition and with health) leads to faster, greater impacts on health, nutrition and other development outcomes – what they suggest will test the hypothesis. CRP 3.7 also suggests a path by which increased access results in user uptake – they state that increasing access to animal source foods via the strengthening of value chains (will result in uptake). Again, however, there is little focus on the mechanism itself.

CRP 3.4 does explore the mechanism of user uptake. For instance, the extract provided mentions that consumers will be concerned about taste and potential for processing. ‘Users also must be strongly involved in priority setting, recognizing important differences in needs and preferences regarding traits (e.g., taste, consistency, timing, or ease of processing), production management systems, or value chain participation associated with gender or other cultural factors. In addition, end-users will need to actively participate in the evaluation of the products and outputs of RTB research, ensuring an effective feedback mechanism to the CRP-RTB.’ However then there is no mention of consumer taste preferences. Consultation of the original proposal revealed a few mentions of consumer taste but this appears to be very low priority.

Following this thread of mechanisms of change towards the end user CRP 3.1 has a mention of ‘farmer-preferred wheat varieties’ but otherwise no mention of farmers having any influence on what is designed/made available. However, the CRP do identify ‘appropriateness of technologies’ as being a key factor as to whether those technologies will be adopted and state that they will address this issue to improve on past success rates for adoption. Reference to adaptation of research products by NARSs to local conditions is highlighted as an outcome that will fall outside the scope of the project ‘use of outputs by development partners and progressive farmers will lead to outputs’. The CRP focus on the crop/technology does not seem to include the farmers actually using the crops/technology. When considering their presentation of evidence the CRP states that ‘cross-commodity innovation systems, decision guides and ICT-based strategies that enable 10-15 million farmers to adapt and implement technologies supporting sustainable farming systems, and thus increase the total farm productivity or irrigated and rainfed wheat systems by 15-25%. SI2 will contribute to climate change mitigation and adaption...’. No mention was made here of building capacity. Can farmers use new technologies? Do they even want to?

As we have said above some of the CRP acknowledge that end users (mainly farmers), are the focus of their work, and therefore need to be engaged during the research. Surprisingly, in our view, some CRPs do not state explicitly that this is part of their process. It is true that this reverts to the boundary question – is it enough for researchers to produce a better crop of something, to then have development partners pick it up and distribute it. CRPs do not agree on this overarching question. There is a spectrum of response from no acknowledgement, through acknowledging they are the end users, to engaging them at the start of the research.

**Do they engage with farmers during research?** In some case the CRPs do not explicitly state they will. For instance CRP 2 and 4 has no acknowledgement of farmer environment and it may be that they feel they do not need to engage with farmers. The CRPs do not talk about farmers’ knowledge and willingness to use the crops. CRP 3.1 has a vision of success ‘Disadvantaged farmers and countries gain better access to cutting-edge, proprietary technologies through innovative partnerships, in particular with advanced research institutions and the private sector’. However CRP 3.1 uses the word access here without acknowledging engagement questions - whether the researchers will create something that farmers actually want? Will farmers know how to use these technologies? Will they have the capacity to use the technologies?

In order to judge the realism of this 'farmer engagement', we would need more information. For instance CRP 3.2 acknowledges that the way the end users use the research should inform the research. CRP 3.2 shows recognition that if incomes are to be increased and stabilised and greater opportunities are to be made available to women and youth, approaches must 'intrinsically involves target communities and national government in designing appropriate solutions'.

**Do they talk about the need for farmer capacity?** CRP 1.2 has little to say on farmers but do pick up on the need for capacity. There is some suggestion of identifying and engaging stakeholders on the ground, e.g., 'using women groups to introduce marketing of "women's" food crops and value added processing'. The CRP also talks of improving capacities at farmer level and recognition that the 'the poor and vulnerable themselves make important decisions governing the best management of available resources...'. Having said this the CRP does not describe if they engage farmers from the very beginning. In another example CRP 3.7 has a role identified for farmers to help identify capacity building needs and to develop capacity building materials. The CRP states that 'real world context' is the driver for technology development.

**Do they acknowledge the complexity of the farmers environment?** The idea that farmers or end users will adapt the research into their 'real world' situations comes out in some CRPs. For instance for CRP 1.1, the role of the farmers in adapting to the innovations is stated as an important point 'Whether the ability to insure livestock against drought will lead to households to accumulate more animals or to keep fewer animals and invest more in each animal is essentially an empirical question. Depending on the circumstances either option could be rational for an individual, but their implications for the environment could be very different.' In this they are noting the importance of the uptake process and the variance in responses that users can have which may neutralise some of the intended benefits with increased longer term cost in another area of the farming/environment system. This is good to acknowledge – and would benefit from planned research on the uptake rather than leave it to development partners to mitigate these wider effects.

In one instance, a CRP acknowledges the dynamic process of research and uptake. CRP 3.3 refers to a 'virtuous circle' which farmers can enter into, where increased production and diversity leads to increased income, freeing up funds for farmers to invest back into their farming practices. This assumes that funds would be invested into farming rather than spent elsewhere. They also have goals to increase numbers of 'extension personnel who effectively engage female farmers to extend appropriate practices for increasing rice productivity and production sustainability'. Although from the extract we are not sure what this tells us about capacity building with farmers themselves?

**Do they delegate farmer engagement to other actors?** In contrast to the above, some CRPs focus on the boundary actors such as 'development partners'. For these extracts it seems that there is an assumption that engagement with development partners equals engagement with end users. For instance in CRP 6 the focus tends to be on development partners, researchers and policy makers. Local people do not seem to have an identity as stakeholders although there are plans for participatory research. In CRP 6 one of the outputs for a theme is 'Participatory models for reserve managers to identify how reserve dwellers use particular resources...' The CRP talks about local people participating in the research. It is not clear how the local people participate.

This question of boundaries is also raised in CRP 3.4. The RTB refers to impact pathways as 'bestbet descriptions of how the partners in the CRP-RTB envisage that the planned outputs will contribute to outcomes and impacts'. They distinguish between research outcomes with next users and development outcomes with end users acknowledging that they have a degree of control in the former but not the latter. While the CRP cannot control whether farmers adopt the approaches

identified by RTB research, could they do more to create an enabling environment/maximise the chances, e.g., by engaging with farmers from the very beginning?

So what we find is a range of responses to farmer engagement. In some cases the CRP acknowledge the end user, but focus on the development partners. In others, participatory engagement with a representative sample of end users is stated, and there are varying degrees of early and intensive engagement.

Most avoid discussing explicitly the balance between intended and unintended outcomes of the focus of the research – since many focus on key crops, there is considerable scope for unintended impact on the wider farming system. Only CRP 1.1 talks about the ‘rational choices’ of the farmers and how something like their proposition of a beneficial insurance might have negative effects – which could lead to a negative cycle of impact. CRP 3.3 hopes for a more virtuous cycle.

It is the authors’ view that for an international development research program to be successful in creating its desired impacts, stakeholder farmers should be involved from the outset of the research and that, without this involvement the chances of research uptake on completion of the program is massively reduced. However, even for CRPs who do not feel that their research requires engagement with local farmers, the authors argue that without the local knowledge from farmers required for an understanding of the farmer context, the research program will struggle to make its desired impacts.

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#### 4.3.3 DO CRPS INCLUDE GENDER AND POWER ANALYSIS?

A cross cutting theme for stakeholder engagement is an understanding of the issues of power. Gender is a key element of power dynamics. The White paper (ISPC 2012) notes ‘Integrated systems research, which is a relatively new area in the CGIAR, is aimed at sustainability and improvement of adoption by changing community behavior and addressing risk-, vulnerability- and empowerment-related constraints to development.’

**Gender engagement.** Many of the CRPs emphasise the role of gender in research engagement and uptake. CRP 2, for instance, proposes that ‘Consistent with CGIAR new Strategy and Results Framework which states ‘CGIAR research will reflect the important role of women in agriculture’, three out of ten of the research sub-themes emphasise women as the target stakeholders and/or beneficiaries.’ Consistent with their decision, the CRP goes on to cite evidence for the role of increasing gender equity in reducing poverty.

The network stated in CRP 3.3 for instance includes participatory variety selection – however, in the narrative above this is only one form of participation and does not necessarily address the social and power issues of research uptake. CRP 3.3 in another milestone is more explicit on this point: ‘ Analysis of on farm performances, gender disaggregated constraints and social and economic effects of technologies interventions; Analysis of adoption patterns and constraints to adoption of rice varieties in South Asia, Latin America and Africa; Assessment of enablers and constraints to adoption of best management practices for natural resource management (or NRM technologies) in South and Southeast Asia, Africa and Latin America; Analysis of farmer crop diversification and livelihoods strategies for rice growing environments in South Asia and Africa’.

There are cases where CRP proposals talk about the importance of gender but do not provide insight into the mechanisms of change that would reduce inequality. For instance, CRP 1.3 talks about gender but does not mention the mechanism of change. Some of the changes which the CRP seeks are very complex. For instance, if ‘Reduced gender disparities in access to and control of resources

and decision making: Greater access to and control of resources and decision making empower women, improving their productivity and well-being' and 'Improved policies and institutions to empower AAS users: Strengthening rights of marginalised people will reduce inequality and poverty in ASS' are to materialise, the CRP will need to permeate and modify well established political and social power structures (from which those with greater wealth, benefit). This is an immense task and they offer very little evidence regarding effective methods for changing stereotypes for the long-term.

Many of the CRPs have implicit processes within their milestones. For instance CRP 1.1 has 'Analysis of gender-based constraints that affect access to new opportunities and options; yield-gap analysis and mapping input dealers and markets; Ex ante and ex post assessment of social, economic and environmental impacts of technological, technology adaptation enabling and policy interventions.' It is the explicit mechanisms of change that we find absent.

**Power analysis** Stein and Valters (2012) raised the point that when creating models of change one must consider the issue of power analysis. While a CRP may want to address issues of inequity, for this to be successful they need to identify and acknowledge the social and economic situation that helped create existing power structures and those actors whose interests maintain these structures. For instance, CRP 3.6, consistent with CGIAR's emphasis on gender equity, makes many references to improving things for women farmers (e.g., 'increasing access to more productive varieties and hybrids'). As the CRP notes, there are social and cultural influences on gender inequity and increasing access is unlikely to be sufficient for empowering women. Who benefits from the oppression of women? Were opportunities to be created for women would they be able to take these up or might the situation be manipulated so that the power imbalance is maintained? This is almost a stream of work itself and the CRP may feel it is beyond their remit but then what are the implications for uptake of varieties and hybrids? Is this a key barrier in their impact pathway, and does the Theory of Change provide a way around the barrier by moving to a different point on the landscape?

The TOC for Rainfed systems in CRP 5 seeks a way around the social disempowerment barrier. They propose that farmer engagement with local development farmers as part of a participatory approach – we assume that local development farmers are a subset of farmers who provide leadership within the farming community. As they move toward improving their agronomic practices, the CRP will raise attention to individual and community values and empower households to engage with relevant authorities to negotiate institutional arrangements. Here we see a planned intentional element within their strategy to change the social dynamics of power in the community.

The complexity of the changes which CRP 1.3 seeks has been commented above. The CRP has great statements and certainly from our perspective, yes, this is a key path for the research to have impact. However, as above, we note that there is little evidence of how these well entrenched and established power structures will be changed. Perhaps within the 'strengthening rights of marginalized people' is a succinct summary of one pathway, but it also implies a stream of work which might be dependent on a development partner rather than a research partner? If so, is that developmental partnership critical to the uptake of the research (and its impact)?

Gender inequity, vulnerability, rights of the marginalized; these are all factors that will affect the uptake of research produced by the CRPs. As such there will likely need to be a workstream on power analysis to ensure suitable uptake.

## 5 DOCUMENT DEVELOPMENT

### 5.1 PROCESS OF GENERATING AND UPDATING DOCUMENTS

One of the things we cannot discern from the extracts is how these documents were constructed. Almost all the literature on theories of change emphasizes the process of developing a TOC. Ideally it is a collaborative effort by those who are going to be engaged in setting the direction of the programme of research or research implementation. TOC is ideally an opportunity to generate more thinking on the research – why it is being conducted, what the contextual factors are, and what evidence do we have that some processes work better than others.

Of course, from the documents we cannot tell if there has been a small working group on these documents, or whether they represent a participatory consultative process.

The ISPC White paper focuses on how all the proposals will work together to fulfill the SLOs, and introduces the idea of IDOs. The framework ‘should consist of a prioritized list of intermediate development outcomes (IDOs) that are at the strategic level and specific enough to link them to the individual SLOs but generic enough not to become prescriptive of different research approaches’.

It lays out how to prioritise and the criteria that might be used. It focuses on the **process** of prioritization, and throughout the document, there are statements about engaging with stakeholders in order to complete the proposal. It certainly picks up on the same idea as in our comment above about how the development of the proposal and the accompanying Theory of Change is best done in a consultative exercise.

The other feature that some CRPs acknowledge is that logic models, impact pathways and theories of change all ‘should’ be living documents, ie revisited regularly and updated with monitoring data on milestone achievement, but in the case of Theory of Change, what is needed is new evidence as to whether a mechanism of change is working in a given situation or whether there are indications that the theory needs to change. This loops back to the above comment about process – since we do not know who constructed the TOC, we also do not know who will take responsibility for gathering the evidence, and updating any Theory of Change.

### 5.2 HOW DOES ONE PRESENT A THEORY OF CHANGE?

In the introduction we have noted that there is, as yet, no obvious or single way of presenting a Theory of Change. Many writers (not just within these CRPs but in the sector generally), are presenting TOC in diagrammatic forms that strongly resemble logic models, with linear pathways. Those who explore more innovative diagrams, such as actor maps, often end up presenting something which is difficult for the external reader to interpret.

Of course, diagrams can be misleading.

In our analysis we see a conflict in many of the CRP presentations. Take for instance CRP 5. CRP 5 notes that ‘Theories of change can be expressed in different ways (e.g. as logic models, LogFrames and impact pathways)’. In their descriptions of the theories of change for the different components of their research, they do work to identify the mechanisms of change. However, the idea that theories of change can be expressed as LogFrames or impact pathways is illustrated in their Theory of Change models. Here the boxes are labelled to reflect columns in a LogFrame yet the mechanism of change – the key component of Theory of Change – is not clearly depicted. Having critiqued their

diagram we note that the CRP is able to describe mechanisms of change in text form. This illustrates the dilemma of these extracts.

## 6 CONCLUSIONS AND RECOMMENDATIONS

“An analysis regarding the quality and adequacy of the theories of change and impact pathways of the 15 CRPs for linking the proposed research activities to the CGIAR high level impact goals, the four System Level Outcomes”

Our analysis of the extracts shows a relatively wide range of quality and adequacy of the theories of change through to impact and contribution to the System Level Outcomes. As a general overview we find considerable variance in the extent that the CRPs acknowledge some key mechanisms of change in their TOC/impact pathways descriptions. These include:-

- the non-linearity of an “impact pathway”
- the complexity and alternatives within an impact landscape
- the role of the research boundary
- engagement with the key policy actors
- engagement with the development partners and a sample of end users.
- communication strategies for research uptake
- analysis of the socio-political power structures the research will be conducted in.
- processes for the review and updating of proposals and plans.
- iterative learning (on research uptake)

To address these we make the following recommendations

1. CRPs could seek explicit guidance on how to incorporate non linearity into milestone targets and documented outcomes.
2. Specifically this is about embedding learning mechanisms about research uptake and impact into the processes of research. At a minimum, CRPs could create an internal learning strategy.
3. CRPs could have explicit plans as to how the CRP will review and update the Theory of Change. What pieces of work will be commissioned to ensure that the research is contributing to the development outcomes?
4. CRPs could document what work will be commissioned to consider the counterfactuals on the impact stream? How will the complex environment be monitored?
5. CRPS could develop an explicit communications strategy. In this strategy we recommend a stakeholder mapping of the policy environment based on actors and discourse, including some analysis of power, influence and control.
6. The communications strategy could also include how the CRP will engage with the development partners and a sample of the end users from the initial planning stages and throughout the research process.
7. CRPs could develop a workplan for not only the analysis of power, but their action plan on how they might stop the research being captured by the elite, and how the disaggregated gender data will turn into engagement with women and the marginalised.

In addition we have made a number of smaller more specific recommendations based on specific sections of the report

Regarding engaging with (a sample of) end users to ensure research uptake:-

- Vision and Impact - CRPs could explicitly consider their end users, and describe the change in the world they are seeking.
- Farming systems – CRPs could frame their work within a farming systems analysis – how might the farmers adapt and adopt, and what are the possible intended and unintended impacts on the **system**.
- Engagement in the research –CRPs could see that a sample of farmers/end users are stakeholders in the research. If a participatory process has been decided on then make explicit that this is the case.
- Feedback loops from end users – as well as gaining insights by farmers/end users participating in the research, there perhaps need to be explicit mechanisms for feedback from wider impacts as the users adapt and adopt the innovations. Since some researchers may feel their work stops at the handover to development partners, there needs to be explicit mechanisms for feedback from development partners to the researchers on the impact – is it a virtuous cycle or a negative cycle?

Regarding making explicit mechanisms of change

- As part of an inception phase of any of these plans, CRPs could present a commissioned piece on 'how' their work will change the domain at the higher levels.
- As part of the inception phase of any of these plans, CRPs could present their internal and outward facing learning environments. This to include schedules of learning events that will revisit the proposed plans and Theory of Change.
- As part of the inception phase of any of these plans, CRPs could present a stakeholder analysis of the policy/development partner environment (perhaps using IFPRI Netmapping models), and a plan for how they will engage with the key networked members of that analysis (this may be through intermediaries but needs to be explicitly stated).
- As part of the inception phase of any of these plans, CRPs could build on their stakeholder analysis and present a communications strategy.
- While we recognize that analysis of the end user environment is a large and unwieldy subject, the inception phase could include a plan (including dedicated funds and manpower) stating when and how the end user environment will be monitored and engaged with.
- As part of the inception phase of any of these plans, CRPs could present a 'Power Analysis' of how their research might change the gender balance and the position of the marginalized and vulnerable.
- As part of the inception phase of any of these plans, CRPs could present a background paper citing evidence that supports their proposed mechanism of change.

Regarding document development

- It would be good for future reference for every Theory of Change to have an author and a short one paragraph narrative on its construction. Depending on the narrative this will give management pointers as to who might update the TOC during the lifetime of the proposed activities. If the TOC has been constructed by a very small group (or even a single manager), those individuals may also take responsibility for updating it, but may need to put in place systems within their wider team for gathering data and evidence for the update. If the construction was through a broad consultation, the wider team may be already familiar with

the ideas and be looking for data and evidence that supports or challenges the Theory of Change.

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