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The Challenge Program on Water and Food: opportunities for adding value to experiences of using research for development (R4D)

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Note on report

CPWF commissioned Dr. Andy Hall to do an informal review of CPWF research for development approach based on a reading of selected documents and interactions with CPWF staff during the CPWF Peer Assist meeting in Lima, Peru in June 2013. This report is the outcome. This should not be seen as an exhaustive or comprehensive review of CPWF. The views expressed are those of the author and do not reflect those of the CPWF.

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Executive Summary

The Challenge Program on Water and Food (CPWF) is approaching the end of a second five-year phase. A distinctive feature of the second phase of CPWF is its explicit use of a Research – for – Development (R4D) approach. The focus of this report is to explore the value of the lessons that this R4D experience holds for others and to suggest ways in which this experience could be leveraged in debates and practice beyond CPWF.

This report is based on discussions with CPWF personnel during their 3rd Peer Assist meeting in Lima, Peru, June 2013, and a review of selected CPWF documents. The report is structured around a number of questions.

So what has CPWF done?

CPWF has been an explicit attempt to reframe research on water and food with a developmental perspective. That is to say, research has been coupled with activities that enable the research to support innovation and change processes. The result of this reframing of research has been outcomes[1] that are leading to tangible developmental impacts at scale. Viewed in this way it is possible to see that CPWF represents an important institutional innovation in the way international agricultural research is used as a tool in the development process.

The program has labeled this way of conducting research as R4D. This places CPWF's experiences in a wider, emerging school of agricultural practice that flags its ambition to go beyond knowledge production and leverage research to deliver development impacts (or, alternatively, placing research evidence within development processes).

CPWF defines R4D as "an engagement process for understanding and addressing development challenges defined with stakeholders. Stakeholders are champions and partners in the research process as well as the change it aims to bring about." In addition, I would add to this definition of R4D, "continuously learning how to do this", implicit in the efforts that CPWF has made to support learning. Overall, this reflects the six key principles of R4D that CPWF has defined as emerging features of its R4D.

What has CPWF got to offer R4D and how does it fit into the wider debates on these topics?

There are three areas where CPWF can contribute. Firstly, CPWF provides a conceptual framing of research on water and food where R4D is a way of framing discussion on how to bring about change. As a result the "CPWF Story" reveals its approach to R4D. The CPWF approach highlights that R4D is actually a framework to structure discussions / negotiations with stakeholders about how change takes place and that this is then used as a way of organizing activities. To make the same point differently R4D is a vision of how change happens and what success looks like and it's a different vision to "business as usual". An important contribution from CPWF would be to elaborate the idea of R4D as a framework rather than as a set of "touch stone" tools.

Secondly, the underpinning hypothesis of the CPWF style R4D covers the following aspects:

- Change is an interactive process involving many players at different scales (farm to policy). Actively working with these players in the identification of problems and opportunities and in addressing these issues helps make change happen.

[1] I follow DAC development evaluation criteria here that define (1) outcomes as things that a program delivers and (2) impacts as the developmental changes (for example livelihoods) that result from those outcomes.

- Policy and institutional change is a key ingredient in facilitating wider scale changes. Tackling the knowledge, attitudes and practices of policy players helps stimulate useful policy and institutional changes.

- Change is an unpredictable process and can only be approached in a learning-by-doing way. Lessons on how to learn and navigate towards impact in complex, unpredictable environments can improve program performance and provide lessons to help others in similar situations of unpredictability and complexity.

- Equitable change demands understanding power, politics/ political economy of innovation. Where we may aim for win-win solutions more often than not policy makers are making choices (with trade-offs) between two options.

Finally, while it is clear that there is not one CPWF R4D, a set of distinctive approaches has emerged shaped by the institutional context and culture, by the nature of water and food issues that are being developed and the nature of stakeholders involved in those issues. Consistent however, is a principle about the importance of creating/ identifying/ strengthening an organization that has convening power to organize engagement, interaction, negotiation and other multi-stakeholder processes and that professional transformation (of researchers) is an essential component of this R4D.

How do institutional innovations that strengthen impact emerge in international agricultural research organizations?

CPWF exemplifies R4D in that it demonstrates an emergent approach, rather than the application of a particular pre-cooked direction. The headline story is not the specific tools that were used to achieve this (although these have value), but the entire process that allowed the emergence of a way of working that appears to be highly successful. As such, CPWF is an important institutional innovation in international agricultural research and its key contribution is the insights it provides into how that process of institutional change took place in different spheres of operation, in partner organizations, in the international organization that hosted the program and in the CGIAR. Of course ultimately the program ran into problems in the institutional setting of the CGIAR and its reform process. This, however, does not distract from the overall value of the CPWF story, but rather it highlights the deep seated nature of institutional challenges to pursuing R4D in the CGIAR – and of course the centrality of institutional change in efforts to achieve impact from agricultural research.

CPWF has a very rich repertoire of accounts of the way water and food innovation emerges. It would be useful to style these as innovation narratives. That is to say accounts of the social processes and institutional changes have led to these innovations and that the key outcomes are strengthened capacities.

Why are there tensions surrounding R4D outcome narratives?

There is a clear tension between reporting outcomes in terms of tangible water and food outcomes and research results on the one hand and on the other hand reporting process lessons about how to conduct research in a development framework and how to use research in support of change and innovation. These tensions are apparent in other R4D program (e.g. AusAID funded African Food Security program and the DFID Research Into Use programme) and therefore lessons around this topic would have value to others. My sense is that lying behind these tensions are issues of professional hierarchies in agricultural science and particularly the tendency of research organizations to project a technological narrative of success (for examples, food production techniques introduced).

The next generation of R4D practitioners and investors would benefit greatly from some critical reflection on CPWF's experience on this including critical analysis of the effectiveness of this system and its constituent parts and at a more general level the effectiveness of the program in supporting learning across its basins.

How can lessons from CPWF be better leveraged?

Lessons from CPWF on R4D are going to exist in two forms. Firstly, in documented analysis, evidence and lessons and secondly through the people CPWF and its partners have been socialized to be through this new way of conducting agricultural research. These two repositories of lessons need to be strengthened and leveraged in different ways. This would involve:

- An external review of CPWF
- Partnership with Aquatic Agricultural Systems and other systems orientated CRP to mine CPWF for lessons and expertise.
- Strengthening communities of practice of R4D researchers and practitioners (through creating a program level community of practice, joining other emerging communities of practice on R4D or focusing on strengthening communication and networking in each basin).
- Identifying R4D ambassadors to help project the CPWF's experience.

1. Introduction

The Challenge Program on Water and Food (CPWF) is approaching the end of a second 5 year phase. A distinctive feature of the second phase of CPWF is its explicit use of an R4D approach. The focus of this report is to explore the value of the lessons that this R4D experience holds for others and to suggest ways in which this experience could be leveraged in debates and practice beyond CPWF. The intention here is not to critique the way CPWF has used R4D. Rather the intention is to find ways to add value to a challenging and worthwhile departure from conventional "business as usual" practice of agricultural research by international organizations in the name of development. (Terms of reference for this assignment can be found in Annex 1).

This report is based on discussions with CPWF personnel during the Peer Assist meeting in Lima, Peru in June 2013, and a review of selected CPWF documents.

2. What has CPWF done?

CPWF has been an explicit attempt to reframe research on water and food with a developmental perspective. That is to say that research has been coupled with activities that allow that research to support the innovation and change process: For example, undertaking research on payments for environmental services, but doing this as part of process of engagement with policy actors so that that research helps inform the design of new policy instruments. And there are many more examples of this sort. The result of this reframing of research has been outcomes that are leading to tangible developmental impacts at scale.

Viewed in this way it is possible to see that CPWF represents an important valuable institutional innovation in the way international agricultural research is used as a tool in the development process. There are many caveats in the CPWF story about the sustainability of this institutional innovation, particularly in the CGIAR. Never the less there is prima fascia evidence that CPWF achieved better outcomes and impacts after it had taken the decision to reframe its research in this way.

The program has labeled this way of conducting research as R4D. This places CPWF's experiences in a wider, emerging school of agricultural practice that flags its ambition to go beyond knowledge production and leverage research to deliver development impacts.

3. Why R4D and what is it?

In order to reveal what CPWF has to offer from its R4D experience it is useful give R4D some introduction. Annex 2 sets out a detailed conceptualization of R4D based on the author's understanding of the current debates and practice on the topic. Key points include the following.

Why R4D? R4D emerges from this on going search for more effective ways of using agricultural research. This is search driven by both disappointing results from the past, but also by an ever more complex development agenda and the need to adapt research approach to this.

What is R4D? There is considerable ambiguity in definitions of R4D. What is however clear is that it an approach that is emerging from practice rather than from any one conceptual tradition. This means

different schools of practice give emphasis to different aspects, some more focused on value chain development, some more on participatory approaches and others giving great emphasis to systems thinking and institutional change[2].

What are the key R4D principles? It is difficult to categorical about key R4D principles. However contemporary understanding of innovation as a systems phenomenon (see detailed explanation in annex 2) would suggest an emphasis on the following:

- Developing partnerships and the organization of multi-stakeholder processes.
- Engagement with the institutional and policy environment for impact at scale.
- Building capacity[3] for sustainable impacts.
- The use of learning based approaches.

These principles can largely be seen in the way that CPWF defines R4D

"an engagement process for understanding and addressing development challenges defined with stakeholders. Stakeholders are champions and partners in the research process as well as the change it aims to bring about."

I would add to this....."and continuously learning how to do this" as this is implicit in the efforts that CPWF has made to support learning.

CPWF articulates its approach through 6 principles, although it uses these more as an ex-post way of describing the important elements of its approach rather than as a guiding design framework (although arguably these are emerging principles from the CPWF experience). These are discussed in more detail in a subsequent section.

4. Where have the global R4D experiences, literature and debates got to?

The current literature on R4D is surprisingly quite thin – although it is debatable what should and should not be included in this body of work. A few things stand out.

- Much of the debate around this topic is weakly conceptualized and at times it is hard to distinguish between ideology and well founded logic. Partially as a result of this, there is no clear picture of what R4D actually is: an approach, a framework, a set of tools, a rhetoric to camouflage "business as usual"?

[2] I use the term institutions / institutional broadly in the sense of things that pattern behavior --- rules (formal and informal), norms, traditions, habits and practices, ways of working, policy and incentives.

[3] I use the term capacity building in its broad sense of the behavior of systems: it includes the skills of individuals the capacity of organizations and the rules and habits and practices these embody, the architecture of linkages and networks between individuals and the wider institutional and policy context that shapes the behavior of individuals organizations and the systems as a whole.

- Much of the recent writing on R4D has focused on "how to manuals" on specific tools. Innovation platforms is the most well know example of this. This is often done without reporting any of the wider conceptual machinery needed to understand how these tools make up part of the wider armory of actions needed to bring about innovation and change.

- There is a lack of critical analysis and reflection on the efficacy of tools used and of the approach as a whole. There seems to be a tendency for much of the writing on R4D experiences (particularly from the international community) to be presented in the flavor of success narratives. This is understandable as accounts of R4D usually emerge from authors closely involved in particular projects where there are imperatives to report good new for donor audiences. It is not clear why the more critical eye of academia has not looked more closely at these issues.

- There is a lack of robust evaluation of R4D programs. In part this is the result of R4D programs being a fairly recent development. However there are methodological challenges in evaluating such program because of their emergent nature and focus on a theory of change where capacity building and institutional change is the main vehicle for achieve impacts.

- In common with literature on agricultural innovation systems, R4D literature remains largely silent on issues power and the political economy of innovation and change. Ironically most accounts of agricultural innovation processes reveal the highly contested nature of change.

From the literature that does exist it is apparent that there are four major gaps.

Firstly there is much agreement on the need for comprehensive institutional change to support the emergence of an R4D approach (Hawkins et al 2009 make this point most forcefully, but also others). However there seems to be a dearth of accounts about how this can actually be achieved in practice and the nature the enablers and disablers of that process. Accounts of this type would be invaluable to others embarking on the R4D route in conventional agricultural research institutional settings.

Secondly, learning and learning based approaches are undoubtedly the new mantra of R4D. But what does this really look like in practice? How can comprehensive learning systems be constructed around R4D project? (By a learning system I would include all M&E arrangements, reflexive space and activities, knowledge management, research on innovations, and policy engagement activities) And do these really help projects achieve their aims? A critical account of a program's experience of development a learning system is needed. This needs to go beyond an inventory of a learning system toolbox.

Thirdly there is little discussion about the mismatch of the evaluative framework of many donors and the sort of institutional and capacity outcomes that R4D projects are likely to deliver. How have programs dealt with this and what are the possible ways forward? Again it needs to go beyond an inventory of different evaluation approaches and discuss how these types of tensions have been negotiated and resolved as its actually part and parcel of the institutional change process.

And fourthly, including issues of power and the political economy of innovation in the underpinning conceptual framework of R4D and finding ways of addressing these issues operationally would make an important contribution to the advancement of R4D.

5. What has CPWF got to offer R4D and how does it fit into the wider debates on these topics?

In my view there are a series of important lesson that CPWF can offer others on R4D. These are covered in the CPWF book to some extent, but this is the emphasis I would give in approximately this order of importance.

1. The conceptual framing of research on water and food: R4D as a way of framing discussion on how to bring about change.

This topic is dealt with extensively in chapter 2 of the CPWF book. Partly it is a story about the way a framework was needed that adequately captured how change actually takes place (although its not entirely clear in what form the R4D framework was articulated). However more important is that this story reveals what R4D really is. My view is that it highlights that R4D is actually a framework to structure discussions / negotiations with stakeholders about how change takes place. This discussion / negotiation is then used as a way of organizing activities. To make the same point differently R4D is a vision of how change happens and what success looks like and it's a different vision to "business as usual". An important contribution from CPWF would be to elaborate the idea of R4D as a framework rather than as a set of "touch stone" tools[4]. Of course specific actions, tools and skills need to be brought in to backfill the operationalization of this view of how change takes place. However it is the framing that is important. It is notable that when the basin leaders talk about R4D they use the language of "framing research in a different way". It would be useful to elaborate on what that framing means and how it is used. It might be as simple as framing research with objectives of tangible outcomes linked to development impacts and then proceeding from there?

2. Elaboration of underpinning hypothesis of CPWF style R4D.

I am not sure where the underpinning hypotheses of the CPWF style of R4D are articulated. However the common narrative around CPWF seems to imply that the following broad hypotheses are central.

- Change is an interactive process involving many players at different scales (farm to policy). Actively working with these players in the identification of problems and opportunities and in addressing these issues helps make change happen.

- Policy and institutional change is a key ingredient in making wide scale changes take place. Tackling the knowledge, attitudes and practices of policy players helps stimulate useful policy and institutional changes.

- Change is an unpredictable process and can only be approached in learning by doing way. Lessons on how to learn and navigate towards impact in complex, unpredictable environments can improve program performance and provide lessons to help others in similar situations of unpredictability and complexity.

It would be valuable to elaborate and make explicit these underpinning hypotheses (guiding principles if you like) and develop a critical commentary on the extent to which these hold true. It would also be useful perhaps to add new principles that emerge from the CPWF:

[4] I make a critique of touch stone tools in my elaboration of what R4D is and is not in Annex 2

For example, in the Mekong case, understanding power, politics/ political economy of innovation is needed in order to find ways to make change take place in equitable ways. (The of political ecology studies in the Mekong and the way these were used as part of the process of stakeholder convening and negotiation is a valuable story in its own right. If there was enough material to spin this out into a chapter for the book it would be an extremely valuable contribution.)

Across the basins there seems to be a principle about the importance of creating/ identifying/ strengthening an organization that has convening power to organize engagement, interaction, negotiation and other multi-stakeholder processes. This principle resonates with the idea of innovation brokers (currently flavor of the month with some academics)-- an intermediary third party organization that facilitates many of the social processes that underpin collective action and innovation.

A headline principle that strikes me concerns diversity and contextualization of the approach. For example there is not one CPWF R4D, but a set of distinctive approaches that have emerged in each basin, shaped by the institutional context and culture, by the nature of water and food issues that are being developed and the nature of stakeholders involved in those issues. Contrast for example the political economy and international relations issues in the Mekong and the focus on convening negotiations, with the Nile basin's more farmer centric R4D approach. Both different, but both appropriate to that context

A further principle that is implicit in the CPWF underpinning hypothesis about institutional change, but is not explicitly stated, concerns professional transformation of researchers. The experience of CPWF seems to point to the importance of this transformation in pursuing an R4D agenda. It is notable (and indeed pleasing) that CPWF basin leaders for example, rarely reveal their disciplinary backgrounds in the way they discuss the program. This suggests that some form of professional transformation has taken place that has allowed them to reframe research for a higher order purpose. For example, perhaps they are R4Dists with technical expertise on water management or agronomy or geography. It seems to have been a reframing of professional skills with development goals. This same principle might also be couched in terms of multi-disciplinary of research teams in R4D, and of course the professional transformation need to work in this way.

CPWF also articulates its approach in terms of six pillars, although as mentioned earlier these are used ex-post as a way of organizing a narrative on what it is that the program does. These are stated as follows[5]

- Theory of change
- Knowledge Management
- Partnerships and Networking
- Research on R4D
- Policy and Engagement
- Adaptive Management

[5] I am not sure where these are elaborated in the CPWF, or indeed their precise function as there appeared to be some disagreement about this at the peer assist

	Change is an interactive process	Policy and institutional change is the key ingredient in making wider scale changes take place	Change is an unpredictable process and can only be approached in learning by doing way
Theory of change	X	X	X
Knowledge Management	X	X	X
Partnerships and Networking	X		
Research on R4D			X
Policy and Engagement		X	
Adaptive Management			X

Currently these pillars are articulated as actions or tools or, to put it another way, a set of distinctive operational features. One of the dangers of this is that these could then be interpreted by others as a set of "touch stone" tools with out any of the underpinning logic for their use. Its might be useful to see how these pillars map onto the implicit hypotheses of the program and use this as a way of developing a stronger rationale for their use. See matrix above.

3. How do institutional innovations that strengthen impact emerge in international agricultural research organizations?

This point concerns the institutional change process that accompanies the development and emergence of way of doing agricultural research that is more effective in achieving impact -- R4D. And specifically how this change process proceeds in the setting of a CGIAR organization. This is addressed in the institutional history of CPWF (I view this as a centrally important chapter in the book). I would elaborate in the following way.

CPWF has been typical in the tradition of R4D in that it demonstrates an emergent approach, rather than the application of a particular pre-cooked direction. To put it an other way it is a story of a group of research professionals from different disciplinary background who have made a conscious decision to pursue a different way of using research to achieve the development ambitions of their organization and funders. Having made this choice the program then tackled a series of staffing and operational issues to give life to this ambition. This led to the emergence of a very particular style of R4D that was shaped by

the problem set the program was dealing with (water and food) and the stakeholders associated with that, the professional backgrounds of a number of key individuals, the nature of partner organizations and particularly by the institutional setting of the host organization IMWI and ultimately by the institutional setting of the CGIAR in which all of this sat.

The emergent approach seems to have paid rewards, achieving tangible outcomes as well as the policy and institutional environments to sustain impacts arising from these outcomes in some of the countries in which the program worked. (This is evidenced by the fact that outcome stories are predominantly about institutional and policy change.)

The key point is that the value of the CPWF experience is that it is an account of a different way of deploying agricultural science that seems to delivering desired results. The headline story is not the specific tools that were used to achieve this (although these have value see below), but the entire process that was used to allow the emergence of a way of working that seem to be highly successful. If this is the case, then CPWF is an important institutional innovation in international agricultural research and its key contribution is the insights it provides into how that process of institutional change took places in different spheres of operation --- in partner organizations, in the international organizational that hosted the program and in the CGIAR. Of course ultimately the program ran into problems in the institutional setting of the CGIAR and its reform process. This however does not distract from the overall value of the CPWF story, but rather it highlights the deep seated nature of institutional challenges to pursuing R4D in the CGIAR – and of course the centrality of institutional change in effort to achieve impact from agricultural research.

The value of this account to others is that it highlights the institutional enablers and disablers to the emergence and spread of a more impactful way of conducting agricultural research. It is not the blueprint for a new approach, but it provides the "machine code" needed to allow such approaches to emerge in a contextually adapted way. Recent efforts of CORAF in West Africa to use an R4D to transform agricultural research in the region would benefit enormously from the CPWF story. Similarly FARA in its efforts to institutionalize its IAR4D approach.

4. Innovation narratives: What success looks like.

CPWF has a very rich repertoire of accounts of the way water and food innovation emerges. It would be useful to style these as innovation narratives[6]. That is to say accounts of the social processes and institutional changes have led to these innovations. These narratives will help highlight a number of insights into the nature of the innovation process, including but not restricted to:

- the linking of technical and institutional innovation;
- the way innovation unfolds as a trajectory and how research, policy and other types of intervention and actors assume different importance at different points in the trajectory;
- the unpredictability of these trajectories;
- the diversity of approaches projects have adopted to support innovation in different contexts;
- and, the types of innovation capacity that persist after projects have ended.

[6] Amanda queried whether these are different from outcome stories. I sense they are as the emphasis is on the process through which outcomes were achieved and an analysis of that process. Having said that I have not read any of the outcome stories.

The last point is one where the CPWF has much to say. For example the Bangladesh experience where CPWF has help the emergence of a different architecture of public agencies working together in new ways to address the needs of water users. This is a new capacity that has been left behind to respond to the needs of the poor in the future. Across the different CPWF experiences there is probably enough examples to make a compelling the case that the key outcomes of CPWF are strengthened capacities. (Another example is CIAT research expertise been used as technical support in policy intervention design).

This message is important because it implies that success in an R4D project is not about water use, crop production or incomes per se, but about the strengthening of capacities to respond to the needs of clients – farmers, consumers, industry etc. Furthermore it is this capacity that is likely to sustain developmental impacts into the future. This point has particular relevance in the CGIAR CRPs where "rural innovation capacity" has recently been identified as an intermediary development outcome (IDO) --- although what this looks like and what are suitable indicators of this has yet to be devised. CPWF has a lot to offer that debate.

5. Multi-disciplinarity and tensions surrounding R4D outcome narratives.

This may be part of the institutional history story. It concerns the implications of R4D for the disciplinary mix of projects and research. As an outside observer it is quite clear that CPWF has not been able to create a critical mass of social science researchers equipped with analytical skills to explore institutional and policy environments and to undertake research on the innovation process associated with water and food (an exception is the Volta basin). This is not a criticism, but a lesson about both the need for such skills, but also about the challenges of putting this disciplinary mix in place and making it work effectively in support of R4D. This also plays out in the way CPWF outcome narratives are articulated by basin leaders and by the program its self. There is a clear tension between reporting outcomes in terms of tangible water and food outcomes and research results on the one hand and on the other reporting process lesson about how to conduct research in a development framework and how to use research in support of change and innovation.

This tension plays out most notably in the debates about the core focus of the CPWF book. Is it primarily about water management innovation for food production or is it primarily about innovations in the way research is used to support water management innovation for food production (with illustrative examples of these outcomes)? I would argue the latter. Irrespective of my opinion, there is a story to be written up about the causes of these tensions in the CPWF and the way these tensions have played out and the implications of these for wider institutional learning.

These tensions are apparent in other R4D programs (for example the AusAID funded African Food Security program I reviewed last year, but also the DFID Research Into Use program) and therefore lessons around this topic would have value to others. My sense is that lying behind these tensions are issues of professional hierarchies in agricultural science and particularly the tendency of research organizations to project a technological narrative of success (for examples, food production techniques introduced). Given the need for multi-discilnarity in R4D, this is probably a major institutional challenge, particularly since R4D implies both doing research for impact and doing research (learning) on how to do research for impact. These same tensions spill over into evaluation as it concerns how success is framed in the eye of the evaluator. The next generation of R4D practitioners and investors would benefit greatly from some critical reflection on CPWF's experience on this.

6. Critical reflection on the CPWF learning system.

One of the underpinning hypotheses of R4D concerns the centrality of learning. Much of the tool box of CPWF R4D approach originated with a set of learning orientated M&E tool (impact pathways,

logic model/ theory of change, most significant change) and this has been supplement over the years with various interactive, reflexive learning exercises, knowledge management, as well as more research like activities exploring the CPWF approach (for example research under the CGIAR ILAC initiative). Taken together these form a learning system.

There is value in describing the elements of this system and the way different tools played different learning roles and how these related to each other. However, more importantly, there is a need for critical analysis of the effectiveness of this system and its constituent parts and at a more general level the effectiveness of the program in supporting learning across its basins. Did structured learning really help the basin based activities adapt and change? Where reflexive spaces an appropriate way of deriving lessons of generic relevance? Was the CPWF a learning system for the wider CGIAR – if not why not? These sorts of questions are important in helping learn how to learn better. There is a growing international appetite for information on how to create effective learning systems to support R4D, particularly among those tasked with designing and implementing these arrangements. For these wider audiences it is important that CPWF avoids the danger of describing its learning system without discussing whether it was fit for purpose in relation to R4D.

7. Critical reflection on R4D tools.

CPWF has used a number of tools, innovation platforms, knowledge management s well as those described above associated with the learning system. As with the discussion of the learning system, it would be useful to describe these tools. However much more important is a critical analysis on the value of these tools and insights into the circumstances under which it is useful to use these tools and the nature of associated activities to stimulate the wider process of change. It is probably safe to say that the world does not need any more "how to manuals" on innovation platforms.

6. Who needs these lessons?

It could easily be argued that the lessons from CPWF could be valuable to the whole community of practitioners, investors and planners in agricultural research. However it is probably best to target organizations that are at the sharp end of either the design and implementation challenges of R4D or the training and research challenges of the topic. The following would seem like the main targets.

1. Practitioners of R4D in the international agricultural research CGIAR

Key targets: CGIARs CRPs many of which are flagging an R4D like approach but face the challenge of navigating the institutional change process in international research organizations as well operation challenges in the design and implementation of R4D programs.

2. Bi-laterally supported programs

Key targets: The Australian agencies (AusAID, ACIAR and CSIRO) are making explicit efforts to experiment with R4D like approaches (labeled as agricultural research for development (AR4D) or integrated agricultural research for development (IAR4D).) In particular they are exploring the design of learning systems. Maybe others like USAID who would benefit from the CPWF experience even though they are not following a R4D like approach. Also, in the same vein, Gates, although that is likely to be a much harder nut to crack.

3. Multi-laterally supported programs

Key targets: IFAD has been supporting R4D like programs for some time and would benefit from the insights from CPWF on how innovation and change actually take place. The World Bank has started to follow a more explicit innovation systems approach, but as an investor in the CGIAR the strategic lessons from the CPWF would have great value.

4. Global, Regional and sub regional agricultural research organizations.

Key targets: GFAR flags an explicit R4D approach, although not clear what it means by that. FARA has developed its own R4D approach through SACP, but is now struggling with the challenge of institutionalization in national program – lessons from the institutional history of CPWF would he highly relevant. CORAF flags IAR4D as a central vehicle of its mid term plan. ASECRCA has flagged R4D like approaches for many years but still faces the challenge of building capacity for this in national programs.

5. Research and training organizations on institutional change and innovation.

Key targets: Communication and Innovation group, Wageningen University, the Netherlands, strong on conceptual development around innovation learning and change; ICAR (International Centre for client oriented agricultural research) pioneer of R4D capacity building, directed by Richard Hawkins; KIT (Royal Tropical Institute), The Netherlands, valuable bridge between academia and practice, explicit interest in R4D.

The matrix below suggests where the different lessons from CPWF would be most useful. In a sense all the lessons are useful for all targets; the emphasis in the table reflects the role as well as the interest of target organizations.

	R4D as framework	R4D principles	Institutional history	Multi disciplinary tensions	Critical reflection on learning systems	Critical reflection on R4D tools
CGIAR CRPs	XX	XX	XX		XXXX	XXXX
Bilateral	XX			XXXX	XXXX	XXXX
Multi lateral	XX	XXXX	XX	XXXX		
GFAR, FARA, ASERCEA	XXXX	XXXX	XXXX			
Research and training	XXXX	XXXX	XXXX	XXXX	XXXX	XXXX

7. How can lessons from CPWF be better leveraged?

The CPWF R4D program is ongoing, with the focus in the last 6 months to finish research but also position lessons to ensure maximized impact over time. It faces the challenge of learning about its own experiences without the time and perhaps objectively to stand back and reflect. Yet at the same time it has both an opportunity and arguably a responsibility to deliver lessons on its R4D to the CGIAR and particularly the CRPs. Given these challenges, how could these lessons be developed and be better leveraged?

It is useful to begin by recognizing that lessons from CPWF on R4D are going to exist in two forms. Firstly in documented analysis, evidence and lessons and secondly in the form of people from CPWF and its partners that have been socialized to be this new of conducting agricultural research. These two repositories of lessons need to be strengthened and leveraged in different ways. The following outlines these different modalities.

Undertake a review / evaluation of CPWF

Experience from CPWF suggests that reviews and evaluation can be a powerful mechanism within the CGIAR to bring about changes in approach and practice. And of course evaluation is an important part of any effective learning system. As well as evidencing the impact of CPWF and drawing out practical lessons, a review / evaluation of the CPWF would be a way of exploring the value of the challenge program model as a way of stimulating institutional change in the CGIAR. An authoritative study of this sort could be highly influential and timely in the on-going debates on the reform of CGIAR and particularly about the development of the CRPs. In order for such a review / evaluation to have currency with in the CGIAR it is important that it is commissioned under the auspices of the CGIAR central evaluation unit (check name of that). Indicative terms of reference for a review / evaluation of CPWF are presented in annex 4.

Partnership with Aquatic Agricultural Systems and other systems orientated CRP to mine CPWF for lessons and expertise.

The systems orientated CRPs and particularly the Aquatic Agricultural Systems (AAS)CRP could benefit greatly from CPWF experiences and lessons. Like CPWF, these CRPs are tackling research and impact challenges that sit at the interface of complex development domains. AAS in particular (but also others) has made an explicit commitment to using and further developing R4D and its staff includes a champion of R4D who played a key role in CPWF (Boru Douthwaite). As a result, not only are lessons valuable in this context, but there is an appreciative audience willing to use them. CPWF should explore ways of partnering with these CRPs as a way of carrying its lessons forward. Modalities of this may include:

- Exploring whether there is CRP money to hold a joint meeting or to conduct and share some analysis of the CPWF experience.

- Exploring opportunities for CPWF personnel to sit on scientific or advisory committees: for example AAS is currently setting up an advisory committee for an assignment to develop Intermediate Development Outcome (IDO) indicators for "rural innovation capacity". This will spillover into the wider evaluative framework of the CGIAR for the CRP's and it is a topics where CPWF guidance could be highly valuable.

- Explore ways of making CPWF personnel available as reviewers of the next round of CRP proposals. CPWF experience would be valuable in providing critique and commentary on how these proposals could be strengthened. A practical way of doing this would be to develop a roster of R4D expertise from CPWF and sharing this with CRP directors.

- Explore ways of using key CRP staff as reviewers / evaluators of CPWF's work. The reviewers will carry lessons into their own work.

Strengthen communities of practice of R4D researchers and practitioners.

In addition to documentation of CPWF lessons and experiences an equally important repository is the individuals who have been involved in the program and the perspectives and competencies they have developed during this time. This represents a community of practice -- a loose group of individuals who have a common way of working and who share experiences and lessons about that way of working. Such communities are notoriously difficult to sustain after the end of program funding (see also point above on partnership with the CRP's). Yet members of these communities will take these lessons and experiences and apply them in their subsequent professional life. This is a key way in which lessons from CPWF can be leveraged into wider use. There are three options:

Option 1. Create program level community of practice

In the remaining months of the program it would be useful to build the social capital and identity of this group in the CPWF. An earlier attempt as creating a community of practice on learning to innovate faded away when the key champion left the program. This suggests that a critical first step would to see if it is possible to identify a champion who would be interested in convening this group. Branding this as a group of R4D researchers/ practitioners might give it broader appeal than learning to innovate.

If a champion can be identified and if a wider group of CPWF personnel and partners can be found who are willing to devote time to reflecting and sharing lessons, then the priority tasks for this group include:

- Develop an identity – what is it that they have in common? What is the distinctive idea or experience that this group has to share and learn about?

- Find ways in which they can maintain communication channels, particularly post CPWF

- Explore ways of making this community of practice visible.

- Explore ways of linking up to other R4D researchers and those with similar perspectives.

Option 2. Join other emerging communities of practice on R4D

Option 1 above is quite speculative and perhaps too ambitious. An alternative suggestion might be to assume that seed of an R4D community of practice is emerging in and around the systems CRPs. It might be more productive to explore ways of networking CPWF personnel into this emerging group (as discussed above with reference to the AAS CRP).

Option 3. Focus on strengthening communication and networking in each basin.

A more practical suggestion idea might be to focus community of practice development at the basin level as this is an existing organizing principle and all the basis leaders are strongly networked in their region. The question remains as to what resources and actions could be used to strengthen this in the remaining life of CPWF? Given time constraints one approach might be to focus on communication resources that are already in place. In particular the "most significant change" stories. These have the advantage

that they are focused on basin-level events and processes. They also reveal the chain of events that lead to outcomes in a very context specific way (a weakness for communication at the program level, but a huge advantage at the basin-level). As a result basin-level stakeholders and partners can relate to these stories at a number of levels – in terms of the water and food issue and in terms of the R4D approach. Developing a larger set of these stories (written by different stakeholders, not just basin leaders) in the remaining months of CPWF and ensuring that these are distributed in the region would help cement together group of individuals and promote lesson sharing between them. This does not guarantee that a community of practice will persist after CPWF, but could help socialize individuals to sharing ideas in a relatively informal format.

Identify an R4D ambassador to help project the CPWF's experience.

To gain better access and profile in R4D debates globally, CPWF needs to find an individual who has credibility within these debates. Program reviewers and consultants who know the CPWF well would be ideal, but it might also be recognized thought leaders who are associated with the program as stakeholders or partners. Another alternative would be to use individuals who have acted as reviewers of the CPWF book – nobody will know the program better. The identified person could then target events and organizations important in the R4D debate (see earlier discussion on audiences for CPWF lessons). This might include

- Conferences to present findings
- Research groups, universities and training organizations active in R4D debates to present finding, but also to highlight the richness of the CPWF experience for further research (see also retrospective studies). Giving short courses/ workshop / seminars on the CPWF experience would also be an other alternative in a university setting
- Global, regional and sub-regional agricultural research organization active in the promotion of R4D.

Think carefully about the title of the book and its main message as this will determine its power to leverage R4D lessons.

The CPWF book is a potentially critical vehicle for leveraging lessons from the program on R4D. I would strongly encourage the program to be bold and pitch the main focus of the book towards an enquiry of how to practice research to enable innovation on water and food. Much of the content is already pointed this direction. However this focus needs to be made explicit in the introduction to the book and in the way some of the chapters are couched (see earlier discussion of the main lesson from the program the emphasis required in presenting these lessons). A suitable title will be essential to communicate this focus. Suggestions for a title include:

Enabling innovation in water and food innovation.
Making research count in water and food innovation
Learning how to enable water and food innovation.
Lessons from working with complexity: How water and food innovation takes place.
The next frontier in water and food research: how to engage (scientists/ science) in change that makes a difference.
From polder to policy: Insights into conducting research at the interface of water and food.
Convening change: Framing water and food research for impact

And the list could go on.

Identify a publication partner for the CPWF book and explore open access options.
Partnering with an other organization on a publication is a way of getting their buy in, distribution channels and networks. For example GFAR showed interest in acting as the publisher for the recent book on capacity building for AR4D that I edited. The attraction was that in addition to GFAR's buy in and networks it would be a public goods, open access publication. A partnership with FARA might also be considered.

In the end the capacity building book was published by UNU-MERIT in the innovation studies arena, but also allowed open access. A grant from the donor (who insisted on open access) was used to distribute 1000 to targeted individuals in the global R4D / agricultural research community (plus open access sources via the internet). This proved to be a much more effective mode of distribution than using a commercial publisher where priced copies deter all but the most enthusiastic reader. An open access publishing route does not have the academic prestige of commercial publisher, but my own experience suggest tells me that open access leads to better visibility and impact (assignments, invitations to conferences and other opportunities to spread key messages). To give an idea of cost: editing, design and layout cost US$ 20,000, printing cost US$ 3000 (in India) and distribution cost US$ 10,000 (postage packaging etc.)

Partner with academics to write papers on aspects of CPWF.
Partnering with academics to write papers on CPWF is a way of packaging parts of the CPWF story in ways that fit on-going debates. This would help raise the profile of the CPWF experience and help spread its key messages. For example I would be willing to co-author a paper on aspects of the CPWF as part of a food security learning project I am part of with the Australian agencies. An indicative topic could be the tensions of multi-disciplinary perspectives in R4D. One role of the R4D ambassador discussed above could be to identify other partnering opportunities of this sort.

Encourage retrospective studies of CPWF.
Retrospective studies of CPWF by academics would help bring the CPWF experience to wider debates. A useful way of doing this might be identify PhD scholars looking for case study material on innovation and institutional change. This clearly has a longer time frame but will keep the CPWF story alive for longer.

8. Conclusions

In my view CPWF has been an important institutional innovation in international agricultural research. It holds a series of valuable insights and lessons that talk directly to many of the on-going debates and operational challenges in pursuing R4D. The CPWF book is a key vehicle for capturing and promoting lessons, although other ways of documenting analysis, evidence and lessons would also be valuable. Ways of leveraging lessons need to focus on both documented analysis and on experience and expertise held by CPWF personnel and its partners and these requires different modalities. Key modalities include commissioning a review the program, strengthening communities of practice on R4D and partnering with other R4D groups and possibly partnering on the publication of the CPWF book. An overriding concern in leveraging these lessons is the need to find opportunities to make the CPWF story impinge on the organization and practice of the international agricultural research centers of the CGIAR. It would be the ultimate irony if such an important set of lessons that have emerged within CGIAR were not able to influence it.

Annex 1

Ref: 4500018493 14 May 2013

Terms of Reference – LINK Ltd.

Expert Consultation at CPWF Peer Assist

Background
Phase II of the CGIAR Challenge Program for Water and Food (CPWF) is a multi-institutional and inter-disciplinary research for development initiative focused on increasing the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF does this through an innovative research and development approach that combines technical (agriculture, livestock and water) and institutional innovations (governance related) within a Basin Development Challenge to maximize how water is used for improving a range of ecosystem services.

The CPWF is a learning institution that focuses on reflection and adaptive management in implementing research for development impact. According to the CPWF, "Reflection is a key part of CPWF M&E". Reflection involves CPWF project staff and key stakeholders taking stock of what has happened and revisiting basic assumptions. Reflecting on whether outcome pathways are unfolding as expected provides a mechanism for adaptive management for projects and basin programs as a whole.

Peer assists have been developed as a mechanism for Basin Leaders to engage in structured reflection and response on learning, challenges and planning for the time remaining in the program. CPWF Management and Program Teams accompany the process for program level learning and planning. The final CPWF Peer Assist is being held in Peru from June 1-8, 2013.

The CPWF is seeking to engage a Research 4 Development expert to accompany the process of the final Peer Assist.

Scope of the Assignment
The consultancy is designed to meet the following objectives:

i) Expert comment on how the CPWF R4D approach has evolved and is manifest in BDCs.
ii) Assess CPWF activities and identify ways to increase impact in the time remaining

The consultant will be expected to:

Review available material on CPWF approach to R4D (2 days):

- MS draft chapter(s)
- Select periodic BDC reports

Participate in CPWF Peer Assist (3 days):

- Observe, listen and reflect on Peer Assist sessions and activities
- Engage with CPWF teams
- Offer summary insights and observations

Expected outputs / deliverables

1. Participation in Peer Assist
2. Written assessment of strengths, weaknesses and opportunities of CPWF approach

Annex 2

A brief introduction to R4D

Over the last half century agricultural research has been a key instrument in development practice and investment. Over the years the demands made of research have expanded from a role of increasing food production to now include reducing poverty and inequity, improving food security and environmental sustainability. The track record of research in contributing to these development agendas is rather mixed. Certainly in the early years major productivity and food production break through where made. This was particularly associated with cereal production and particularly in Asia – the so call Green Revolution. Yet elsewhere and particularly in sub-Saharan Africa progress was less promising. The reasons for this are manifold, but in brief concern the complexity of the production and socio-economic and political environment in which change in agricultural practice is embedded.

The last thirty years has seen both a growing critique of the ability of agricultural to deliver its promised contribution to the development agenda. However it has also the emergence of a series of new approach to agricultural research that respond to this critique, notably farming systems research and participatory research and development methods. R4D emerges from this on going search for more effective ways of using agricultural research, a search driven by both disappointing results from the past, but also driven by an ever more complex development agenda

At its simplest, R4D is nothing other than a statement of intent. That is to say that it is an expressed desire to conduct agricultural research not merely to produce new knowledge and ideas, but to do so in a way that makes sustainable and wide scale impacts in a developmental sense. Over the last decade or so this statement of intent has started to take shape as a recognizable tradition of research practice (a review of this history can be seen at Hall et al 2012). This emergence from multiple sources or schools of practice has a number of implications.

Firstly, there is no universal agreement on what constitutes an R4D approach with different groups of practitioners giving emphasis to different forms of practice: For example some R4D practitioners who emerged from the farmer participatory research tradition continue to emphasis this aspect; some give emphasis to value chain approaches. Others see this more in terms of a strategic planning and capacity development task, while other take inspiration from systems thinking and particularly the different schools of thought on how innovation can be enabled as a systemic phenomena.

This emergence from practice has a second implication. R4D doesn't have a very strong or well articulated conceptual basis. In other works there is no widely accepted framework that reveals the underpinning logic behind the approach to help practitioners make operational choices that would be consistent with that framework and logic. Instead R4D is often articulated as a series of "touch stone" practices or tools – innovation platforms, reflective exercises, partnerships, participation, impact pathway analysis – with scant framing guidance on how these practices should be deployed in different circumstances or as a starting point for a wider process of change.

The third and more positive implication of emergence is that R4D has been able to borrow and adapt concepts and practices along the way. This has been particularly helpful in the last decade because its has allowed the participatory ideas of the late 20th century to be supplemented by more explicit systems thinking and specifically with innovation system ideas. These ideas are conceptually well founded and can be used to start and help guide practice and provide a convincing logic as to why "business as usual" is unlikely to deliver the results expected from agricultural research – and of course it provides a logic for alternative and more useful practices.

What then constitutes an R4D approach, or more accurately, what are the key principles or underlying hypothesis? These principles – in my view -- fall out of a contemporary understanding of innovation. This understanding has a number of strands.

The first concerns the concept of innovation itself. This is understood not as the creation of new technologies or ideas (this is invention), but as the wider process of change that encompasses both the production and creative use of ideas to achieve social and economic ends. A new crop variety is an invention. The adaptation of farm practice to used this variety, along with the changes in marketing systems needed to supply these seeds and sell the new crop, and perhaps the pricing policy changes needed to encourage this at scale constitute the innovation. A new plant breeding approach that accurately responds to farmers' crop variety needs could also be part of this innovation.

The second concerns the nature of innovation. As the example above reveals innovation often encompasses technical changes (new variety), institutional changes (habits, practices traditions, rules and norms in markets and in plant breeding research) and policy changes. These are often discussed as different types of innovation, although it is their totality that has social and economic meaning. Usually these different types of innovation work together to allow new ideas (or combinations of new and existing ideas) to be put into use.

The third concerns the process of innovation. Rather than being an expert driven process of transferring new ideas, innovation is now understood as an interactive process of learning (see annex 3 on learning). In plain language, different players in the innovation arena exchanging ideas and as a result adapt and master new ways of doing things. This involves technological learning (for example, new ways of crop production) but also institutional learning (new ways of doing things, for example, in input and out put markets, but also in plant breeding) and policy learning (new policies to support innovation and distribute its benefits).

The fourth concerns the dynamics of innovation. Innovation is not a one off, static event. Rather it is a dynamic process of continuous learning and change. In part this results from the way players in an innovation arena respond to a continuous and unpredictable series of shocks and opportunities – changing markets, climatic conditions, technological opportunities, competition. However this dynamic also results from innovation being and social process whereby in a well networked innovation arena the act of innovation allows players to continuously upgrade and improve the way they work and "do" innovation. For example, good plant breeders are always learning new ways to improve their ability to respond to the needs of farmers – or at least they do in an ideal world. This dynamic process of continuous adaptation, learning and change reflects the systems nature of innovation with its multiple players, feedback loops and unpredictable future states.

The final point concerns the central role that policies and particularly institutions play in the innovation process. It is now clear that institutions -- in the sense of the habits, practices, rules and norms – are the key force that patterns the behavior of players in the innovation process. Institutions shape how and with who players interact and share / exchange / access information; they shape how information is generated and validated; they shape how research priorities are set and how results are judged; they shape how players learn; and they provide the incentives and disincentives to the adaption of new habits and practices. This notion of institutions is central R4D as R4D implies a new and different way of working and therefore understanding the institutional environment and finding ways to change it is key to the emergence and nurturing of R4D.

From this understanding of innovation a number of recognizable principle of R4D emerge.

Partnerships and the organization of multi-stakeholder processes. Innovation requires interaction to share ideas, or at a simpler level to get user feedback into the innovation process. This is not just about developing interaction between researchers and farmers, but about strengthening interaction and linkages among all players involved in innovation arenas and this includes the private sector and policy makers[7]. Partnership is also an important tactic that R4D uses to address issues that sit across conventional sector and organizational boundaries -- for example food safety issues involve both agricultural and health dimensions and partnership is a way of bringing this wider group of players needed to enable innovation on such issues. Brokering and partnerships and convening platforms to enable multi-stakeholder process are a key task in R4D.

Engagement with the institutional and policy environment for impact at scale. Innovation involves policy and institutional change. This is the enabling environment that allows change and innovation to happen and is often the central bottleneck in the agricultural innovation process. Engagement with the policy and enabling environment is also a key way in which R4D addresses the issues of achieving development impacts at scale. The logic is that strengthening the policy and institutional environment enables a wider process of innovation in sectors, regions and even countries that would not normally be achieved by conventional techno-centric projects. For example, institutionalizing participatory crop improvement in a large public sector plant breeding organization such as that found in India would have much wider impacts than a techno-centric project that uses participatory crop improvement to develop a new variety and promote this variety.

Capacity building for sustainable impact. A contemporary understanding of innovation as a systemic phenomenon redefines how the capacity to innovate is understood. It suggests that capacity is not only the skills of individuals and capabilities of organizations, but also the architecture of linkages between different players, and the policy and institutional environment that enables interactive learning and innovation. As already explained this architecture and the institutions that shape it -- and shapes the way individuals and organizations work -- needs to continuously evolve in response to unpredictable shocks and opportunities. R4D addresses sustainability by contributing to the strengthening of this innovation capacity in this total systems sense. The logic is that promoting policy and institutional development that will allow the system to not only address the shocks and opportunities of today, but to help it continuously adapt to address the unpredictable shocks and challenges of the future.

Learning based approaches. Learning is central to the process of innovation as it embodies the process through which new behaviors and practices are developed and brought into use. R4D deploys learning approaches in a number of ways. In (1) an operational (monitoring) sense to explore how to navigate institutional environments – trying things out and seeing what works to help cope with a complex and unknown intervention environment; (2) in an evaluative sense of learning about which approaches to a particular problem set work and making judgments about the effectiveness of these in terms of outcomes and drawing lessons about this; (3) in a capacity development sense of learning about which approaches to learning about how to bring about change are most effective. (Learning is a topic fraught with misleading and ambiguous language and separate note on learning in R4D projects is provided in Annex 2.) R4D addresses this learning agenda with (1) the adaption of a range

[7] By policy makers I mean bureaucrats and managers who allocate resources and design incentives and interventions either in national and sub national government ministries and departments or in implementation agencies – research and training organizations, banks and the corporate sector. In ministries and department one of the key issues for R4D is to find ways to facilitate policy making processes that are inclusive of a wider range of stakeholders (including researchers) perspectives and aspirations – hence the emphasis on partnerships and multi-stakeholder processes

of learning based monitoring and evaluation techniques (2) the use of multidisciplinary teams to bring analytical attention to the nature of the policy and institutional environment. (3) The use of a range of techniques to extract lessons from practice, these techniques include research on the innovation process, impact evaluation techniques as well reflexive learning techniques, story telling and the development of institutional histories

These principles can largely be seen in the way that CPWF defines R4D

"An engagement process for understanding and addressing development challenges defined with stakeholders. Stakeholders are champions and partners in the research process as well as the change it aims to bring about."

I would add to this……."And continuously learning how to do this" as this is implicit in the efforts that CPWF has made to support learning.

Annex 3

Why learning is important in R4D

R4D suggests that in order for agricultural research to effectively contribute to innovation and development it needs to be reframed as an activity that bundles together different sorts of research and bundles together research with entrepreneurial activity and activities that build capacity by stimulating organizational, institutional and policy change. This however leaves open the question of how one organizes these different activities, organizations and processes in such a way that research plays a valuable role in development. Surely it can't be the same in different countries or subsectors or under different stages of social and market development? The answer is we don't know how to organize this, at least not in a specific sense, and this has to be worked out and learnt on a case-by-case basis. The implication of this is that the R4D must have a way of framing this learning.

If this sounds rather abstract, it is useful to start by thinking about the more familiar form of learning — the technology development process. A new technology is developed through both a structured learning process (scientific research) and through a learning-by-doing process (adaptation and practice) — the latter often generates questions for the former to address. The power of scientific research is that over time its practice has learnt increasingly effective ways of problem solving and discovery. This is backed up by communities of research scientists sharing both analyses and — of equal importance — methodological breakthroughs. In other words there is a continuous process of learning how to do scientific research better.

To take the argument further, just as we don't know how to organize for innovation and development, we never know the technological answer to a problem in advance. However, we know how to produce this answer because we have a learning tool called scientific research. And this has a third learning loop that builds the capacity of scientific research as it goes along — the first loop solves the problem, the second loop improves methods to solve problems and the third loops improves how science is organized to develop and share improved methods and hence solve problems.

Learning how to use research for development

This same argument holds true for the question of how we organize so that scientific research can play a valuable role in development. We don't know how to do it, so what is required is a process that involves these three loops of learning. In practice this is completely analogous to the way scientific research works. It requires communities of researchers and development practitioners (in the widest sense) sharing analyses and methodological breakthroughs from both research and practice and continuously learning how to do research for development better. The only difference is that because we are bundling together research (of different sorts) and development and entrepreneurial activity, it is much more complicated. For example, the learning community (or communities) will involve researchers, technology users (from farmers to policy makers), development organizations and market players and unlike the scientific research community there are no traditions, rules or structures that frame how this learning should take place.

What is therefore required is an approach that frames this sort of triple loop learning and capacity building. This learning is, therefore, a critical dimension of helping address the issue of making better use of research for development. What might this look like in practice?

Loop 1: Communities or networks of researchers, research users and development organizations **engaging** in the resolution of technical, institutional and policy dimensions of a particular problem set or opportunities

Main activities: Market and development interventions supported by research and learning by doing
Operational focus: Projects

Loop 2: Communities or networks of researchers, research users and development organizations **developing and sharing lessons on how to engage** in the resolution of technical, institutional and policy dimensions of particular problem sets or opportunities
Main activities: Reflective learning supported by research, monitoring and evaluation and knowledge management
Operational focus: Portfolios of programs or projects

Loop 3: Apex bodies of communities or networks of researchers, research users and development organizations developing and sharing lessons on how to strengthen the process through which Loop 2 lessons are developed and shared
Main activities: Research on learning management and knowledge management
Operational focus: National, regional or international coordinating bodies

Integrating Different Types of Research and Action and Integrating Different Types of Learning

To summarize the above, the ambition to use research for development better requires a framework that helps with two types of integration. The first concerns the integration of research (of different types) with market and capacity development/ development activities. The second concerns integrating different forms of learning so that there is a continuous process of strengthening the capacity to use research for development.

Annotated Bibliography

Where possible links to full downloads of the works listed below are provided at http://innovationstudies.org/index.php?option=com_content&task=view&id=309

A.A. Adekunle, J. Ellis-Jones, I. Ajibefun, R.A. Nyikal, S. Bangali, O. Fatunbi and A. Ange (2012). Agricultural Innovation in Sub-Saharan Africa: Experiences from Multistakeholder Approaches. Forum for Agricultural Research in Africa (FARA): Accra, Ghana.
This paper reviews 21 case studies from Africa to illustrate multistakeholder approaches to agricultural innovation. Given that "there have been few success stories in the agricultural sector across SSA, where multiple stakeholders have worked closely together to foster agricultural innovation", this paper feels it is useful to document success stories and identify reasons for their success.

Hall, A. (2011). Putting Agricultural Research into Use. Lessons from Contested Visions of Innovation. UNU-MERIT Working Paper 2011-76. Maastricht: United Nations University-Maastricht Economic and Social Research and Training Centre on Innovation and Technology.
This paper summarises the experiences of the Research Into Use (RIU) program. It has three key messages. First, research into use is not a two-stage process of research, then research into use. Research has a valuable (although differing) role at all stages of the innovation process and this suggests that research-like and development-like activities need to be blended in projects. Second, there are a number of different starting points for projects seeking to enable innovation — technology, markets, policy, capacity (the establishment of innovation platforms, for example). All of these are valid as long as they explore and tackle the second generation challenges that inevitably emerge. And this almost always means tackling policy and institutional issues. Third, leadership of such projects needs clear vision of the range of actions that support innovation and not get stuck either in business as usual or in cherry picking fashionable tools (innovation platforms, private sector-led development, etc.). Enabling diversity in pragmatic, horses-for-courses sorts of ways is key.

Hall, A. (2009). Better Research Communication: Will it Enhance Innovation and Impact. LINK Look Feb-March 2009. Learning Innovation and KNowledge (LINK): Hyderabad.
This editorial explains that communication of research results will not necessarily help impact, particularly in the context of policy research. It argues that research needs to be better embedded in the policy process, responding to demands and taking advantage of windows of opportunity. It gives an example of this from Nepal. This might be useful in starting to think more widely about the notion of communication in relation to innovation.

Andy Hall (2007). "The origins and implications of using innovation systems perspectives in the design and implementation of agricultural research projects: Some personal observations." UNU-MERIT Working Paper Series #2007-013, United Nations University-Maastricht Economic and social Research and training centre on Innovation and Technology: Maastricht, The Netherlands.
This paper examines systems thinking in the design of research projects. It documents the experiences of a group of researchers in who experimented with this framework and tried to operationalise its principles in project design. The paper comments on some of the implications of using this approach and the challenges it presents for implementers of agricultural research projects in developing countries.

Hall, A., Rasheed Sulaiman, V. and Peter Bezkorowajnyj (2007). Reframing Technical Change: Livestock Fodder Scarcity Revisited as Innovation Capacity Scarcity. ILRI and UNU-MERIT.
This is the conceptual framework of a project that had many parallels with the NRM projects of the CSIRO/ CORAF partnership program. It sets out the rationale for approaching systems upgrading not as a technological issue per se, but as a capacity issue looking at the types of clusters of organisations and policies needed to make innovation happen. The researchable question was about how to facilitate this to take place. It has case studies that give evidence of how such processes of innovation take place in the livestock sector. It focuses on India and Nigeria. It also has some discussion about the implications of a project like this for M&E arrangements.

Hawkins, R., Heemskerk, W., Booth, R., Daane, J., Maatman, A. and A.A. Adekunle (2009) (with contributions from Nederlof., S., Defoer, T., Sellamna, N., Gildemacher, P. and Enserink, D.). Integrated Research for Development (IAR4D): A Concept Paper for the Forum for Agricultural Research in Africa (FARA) Sub-Saharan Africa Challenge Programme (SSA CP). 92 pp., FARA: Accra, Ghana.
This paper, written for FARA as a working document on the IAR4D concept, attempts a description of IAR4D, traces its evolution and enumerates and explains some of its key (four) descriptive principles. The authors attempt to illustrate how each principle could be incorporated in development practice, illustrating this through 13 case studies – essentially IAR4D as a set of 'good practices or actions'.

Laurens Klerkx, Andy Hall and Cees Leeuwis (2009). Strengthening Agricultural Innovation Capacity: Are Innovation Brokers the Answer? International Journal of Agricultural Resources, Governance and Ecology, vol. 8(5), pp. 409-438.
This paper examines the role of innovation brokers in stimulating innovation system interaction and innovation capacity building. It reflects on the potential role of innovation brokers in developing country agriculture.

A. Maatman, Clottey, V.A., Diallo, A., Djagni, K., Duplessis, Y., Gyasi, K.O., Kabore, M., Keita, F., Kondo, K., Konlambigue, A., Kpogan, E., Rudiger, U. and A.S. Traore (2011). Competitive Agricultural Systems and Enterprises (CASE): A Grassroots Approach to Agribusiness Development in Sub-Saharan Africa. Volume 1: Reference Framework and Early Experiences. IFDC and CTA: The Netherlands.
Documents IFDC's experience of linking together soil fertility and productivity enhancement with market development. Doesn't use the innovation platform language but is using these sort of ideas pragmatically to achieve similar ends to the CSIRO/ CORAF partnership in West Africa. The country case studies are all West Africa.

Mbabu, A. and C. Ochieng (2006). Building an Agricultural Research for Development System in Africa. ISNAR Division Discussion Paper 8. International Food Policy Research Institute (IFPRI): Washington, D.C.
This paper discusses how impact-oriented agricultural research for development systems in Africa can be better organised and managed. This involves carefully linking the agricultural research agenda with national development priorities; improving coordination, interaction, interlinkages, partnerships, and networks among system agents-that is, agricultural research institutes, extension systems, higher education institutions, farmer organizations, civil society, and the private sector-and finding innovative financing and resourcing mechanisms to support the numerous components of the system. The paper gives centrestage to a cascading logic that links research with a wider set of actions and policies that together stimulate innovation and the achievement of higher order development goals such as food security and poverty reduction.

Mbabu, A. and Hall, A. (Eds.) (2012). Capacity building for agricultural research for development: Lessons from practice in Papua New Guinea. Pp 274. UNU-MERIT: Maastricht
As well as documenting experience of capacity building for AR4D in Papua New Guinea, this book reviews the concept of AR4D and suggests how such an approach can be advanced.

Mur, R. and Nederlof, E.S. (In preparation). Research, Platforms and Innovation. Royal Tropical Institute (KIT): the Netherlands.
Based on an institutional history of RIU's experience of innovation platforms. Good practical details of what innovation platforms look like in practice, including challenges and limitations. Case studies are all from Africa.

Nederlof, E.S. and Pyburn, R. (eds.) (2012). One finger cannot lift a rock: Facilitating innovation platforms to trigger institutional change in West Africa. Royal Tropical Institute (KIT): the Netherlands.
A practical guide to using innovation platform-type arrangments. The intro to the book states…… "The research programme Convergence of Sciences – Strengthening Agricultural Innovation Systems in Ghana, Mali and Benin (CoS-SIS) explores and experiments with new pathways for agricultural innovation. It has put in place innovation platforms – referred to as "Concertation and Innovation Groups" (CIGs) – for a variety of sectors: water management and rice, oil palm and cotton in Benin; oil palm, cocoa and food security in Ghana; and crops and livestock, water management and shea in Mali. The programme aims to enhance institutional change through these CIGs. In this book, West African research associates from the CoS-SIS programme describe how they initiated innovation platforms and facilitated the different steps in a CIG cycle."

Nederlof, S., Wongtschowski, M and van der Lee, F. (eds.) (2012). Putting Heads Together: Agricultural Innovation Platforms in Practice. Royal Tropical Institute (KIT): the Netherlands.
Based on a writeshop with innovation platform practitioners. Provides firsthand accounts of the practice of establishing and using innovation platforms. Has a good summary table of the dos and don'ts of innovation platforms. Case studies are all from Africa.

T.S. Vamsidhar Reddy, Andy Hall and Rasheed Sulaiman V. (Forthcoming 2012). Locating Research in Agricultural Innovation Trajectories: Evidence and Implications from Empirical Cases from South Asia. Science and Public Policy.
This paper sets out the idea of innovation trajectories as a way of understanding the different roles of research on the path to innovation. It makes the argument that the composition of project teams will differ at different points along the trajectory and that this has implications for the types of organisations that take a leadership role at different points in time.

World Bank (2006). Enhancing Agricultural Innovation: How to go beyond the Strengthening of Research Systems. Economic Sector Work Report. The World Bank: Washington, DC, pp. 149.
The book explains how innovation systems ideas can be used to identify a range of interventions beyond research that can help stimulate and enable innovation. Its purpose is to show what things can be done to add value to research for innovation. A key section of the book presents a diagram that contrasts orchestrated innovation trajectories led by research and opportunity-driven innovation trajectories led by entrepreneurs. One of the book's key messages is about the way research (and other interventions) can be used to help opportunity-driven innovation trajectories that get stuck.

Annex 4

Indicative TORS for CPWF evaluation

A review / evaluation of the CPWF should include the following terms of reference.

Background.

CPWF has been a 10 year investment by the CGIAR aimed at exploring ways of addressing agricultural productivity, environmental sustainability, food security and livelihoods concerns that sit at the complex interface of water and food research, practice and policies. Not only did the CPWF seek to achieve progress in addressing these concerns, it was also sought to pilot new ways of using research to achieve impacts. At its inception an explicit aim of CPWF was that it would act as a vehicle to influence the wider CGIAR in the way it deployed research for impact in complex development domains.

The progam has generated considerable evidence that suggests that through its research and associated activities, tangible outcomes in water management and food security have been achieved. In addition, in its second phase CPWF has developed a series of institutional innovations in the way it conducts its research. These innovations focused on framing its research with an analysis of impact pathways and a proactive engagement through dialogue and partnership with key stakeholders and change agents in these pathways. CPWF refers to this as an R4D approach. The program has generated evidence that suggests that this R4D approach has allowed it to achieve tangible outcome that would not otherwise have resulted from conventionally framed research.

The focus of this review / evaluation is three fold. (these broadly follow the DAC development evaluation criteria)

Firstly to provide an independent assessment of the outcomes (what it delivered) and impacts (on livelihoods, food security etc) of the program and to judge the scale, targeting (men/ women / different classes of stakeholder) and sustainability of these impacts after the closure of the program.

Secondly, to explore the effectiveness program and particularly of the R4D approach in achieving these outcomes and impacts and drawing lessons for future program design and more generally for the use of agricultural research in complex development domains.

And thirdly to explore and draw lessons about the effectiveness of the challenge program model as a way of developing and piloting more impactful modes of agricultural research. In particular the effectiveness of such programs to act as a vehicle to influence the way the CGIAR deploys research in complex development domains and the lessons this may hold for the CGIAR CRP's and the on-going process of reform in the CGIAR.

Key expertise required (names are a bit thin and need a north south balance)

1.Team leader: An evaluation specialist with specific experience in the evaluation of international agricultural research and capacity building programs.
Suggestions: Dough Horton, John Lynam (could probably be more creative here, but Doug is a must in some role in a review like this.

2. Water and food specialist. A researcher or practitioner with specific experience of the range of research, practice and policy issues at the water and food interface
Suggestion: an authority identified by CPWF WLE

3. Impact assessment specialist. An evaluator with specific expertise in both quantitative and qualitative impact assessment techniques.
Suggestions: many from the consulting world. Howard Whites 3IE group would be a starting point

4. An R4D specialist. A researcher or practitioner with specific expertise in the design and implementation of research programs that seek to use research for developmental purposes. Familiarity with the CGIAR and issues related to institutional learning and change.
Suggestions: Adiel Mbabu, John Lynam, Doug Horton, Elon Gilbert

About CPWF

The CGIAR Challenge Program on Water and Food was launched in 2002. CPWF aims to increase the resilience of social and ecological systems through better water management for food production (crops, fisheries and livestock). CPWF currently works in six river basins globally: Andes, Ganges, Limpopo, Mekong, Nile and Volta.

CPWF is a member of the CGIAR Water, Land and Ecosystems Research Program. The program focuses on the three critical issues of water scarcity, land degradation and ecosystem services, as well as sustainable natural resource management. CGIAR is a global agriculture research partnership for a food secure future. Its science is carried out by the 15 research centers who are members of the CGIAR Consortium in collaboration with hundreds of partner organizations.

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