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project **Innovations in the assessment of the
impacts of NRM and policy research in
development programs**

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2 Executive summary

Natural Resource Management Research (NRMR) differs from agricultural commodity research due to its complex, multi-scale, multi-stakeholder and place-based focus. International research for development programs seek, through a focus on outcomes and impact, to contribute to poverty reduction through building more resilient and sustainable agricultural systems. Evaluating the impact of such complex programs presents methodological challenges to traditional impact evaluation designs and methods. This SRA explored new approaches to NRMR impact evaluation to support the development of legitimate, effective and credible methodologies and processes that respond to the characteristics of NRMR programs. A position paper recommends:

- Seeing these complex programmes/interventions as contributory causes, as part of a causal package of events and conditions which together are expected to be sufficient to bring about the desired outcomes and impacts.
- Developing mature theories of change, with assumptions, risks and unintended effects. Indeed, there is probably a need for several nested theories of change for a programme from different perspectives and for different levels.
- Ensuring that there is a robust monitoring system in place to track progress and revise the theory of change as experience and insight is gained, and to provide baseline and ongoing data for evaluation.
- Carefully articulating an essential set of evaluation questions of interest, including those focussing on the causal links between the NRMR programme/intervention and the expected outcomes and impacts.
- Identifying and understanding the attributes of the specific intervention being evaluated and their implications for evaluation.
- Developing appropriate mixed methods evaluation designs based on the evaluation issues to be addressed and the attributes of the intervention, keeping in mind the timing and resources available for the evaluation.
- While the high-level system-level outcomes (SLOs) need to be kept in mind, focussing on intermediate development outcomes and making a link to the SLOs with logic and prior evidence.

Building on the existing evaluation literature, in particular on evaluating advocacy, evaluating capacity building, and the research link to policy influence.

3 Background

After decades of stagnation, global investment in agricultural research in the pursuit of poverty reduction is on the rise again. Despite the global financial crisis, awareness of the real and potential contributions of agricultural research to meeting development goals (particularly the MDGs) has meant that developed nations are again looking to the many dimensions of agriculture, including forestry and fisheries, to accelerate progress.

With increasing investment, there is increasing focus on the need for better outcomes and greater impacts from investments. This has in turn led to both greater scrutiny of past investments in this field and to comparison of the return on investment in different commodities and approaches. These trends in agricultural research for development have led to two imperatives: (i) The search for more effective ways to do research that will lead to development impacts and (ii) the need to measure the performance of research approaches to know if they are working and to justify increased investment by developed country governments and their citizenry. Progress in these areas is an important priority for research and development agencies (ACIAR Corporate Plan 2008-2011; AusAID Office of Development Effectiveness, www.ode.usaid.gov.au/).

In the context of Australia's large and growing investment in international research and development assistance (\$3.8 billion in 2009), particularly in NRM and policy arenas, there is a clear need for innovation in the evaluation of NRM and policy-oriented research. The broad field of impact assessment is an active field of research yet consensus on methods for assessing the effectiveness of these large investments in research are essential and in demand (Independent Review of Aid Effectiveness, 2011).

NRM Research for Development programs operate in a complex context involving multiple partners, interactions between natural resource systems and human efforts, and involve multiple intervention strategies, and aim at outcomes and impacts that are often long-term. All this implies a rather complex causal relationship between the activities undertaken and desired outcomes and impacts.

There is therefore a need to better understand what can realistically be said about causality in these complex situations, a need to recognize and examine contribution rather than simply seeking attribution. NRMR programmes need to be seen as contributory causes recognizing that a number of other supporting factors are also needed for desired effects to be realized. And given the complexity, it is also important that attention is paid to understanding how outcomes and impacts are brought about, not just whether they are.

Impact assessment is most often used for accountability purposes. However, program managers also can use impact evaluation for learning. Thus the project seeks to balance these two demands and seeks to set out approaches and directions that can be used in a learning-oriented Impact Evaluation (IE) of NRMR programmes. Impact Evaluation is taken here to connote a broad focussed evaluation assessing how the programme was implemented and the results it achieved.

In the CGIAR, there are also Impact Assessment (IA) evaluations undertaken, primarily from an accountability perspective. Accountability driven evaluations focus on the results achieved and associated causal processes: assessing whether programmes 'produced' impacts and their magnitude. Most of the time, the approaches used have been based on CGIAR's Impact Assessment methodology (<http://impact.cgiar.org/methodology>).

The Science Council Secretariat (2006) describes impact assessment as:

"Impact assessment studies should answer two basic questions:

- Counterfactual: What would have happened if the project had not been undertaken at all or if it had been undertaken later?
- Attribution: How much of the benefits generated by the innovation are attributable to the different actors involved in R&D and implementation?" (p. 43)

Many impact assessments focus on valuation—estimating net economic benefits from the project or programme—and often are aimed at providing evidence for CGIAR investors that funds have been well spent.

During the last decade the literature on impact assessment has been dynamic with new methods emerging that take qualitative and quantitative approaches. These approaches emphasise accountability, transparency, participation and learning. These elements are reflected in the design and implementation of monitoring and evaluation systems that support research for development programs. In this context impact assessment is one of many types of program evaluation. Results-based M&E depends on a mutually agreed theory of change that assists the identification and definition of outcomes and relevant indicators of those. Impact evaluation of such programs will necessarily build on the information generated and archived by the program M&E system. The basis of impact evaluation is built during program design and planning, hence the opportunity to develop an integrated M&E system for NRM.

4 Objectives

The aim of this project is to provide a prospectus on how to improve the methods and practice for monitoring and evaluation of research for development so as to contribute to an improved basis for ex-post impact evaluation.

Success for the SRA is the conceptualization of mixed methods approaches to an integrated M&E and impact assessment system that are compatible with a results-based program implementation culture and is implementable at reasonable cost.

The specific activities were:

1. Identify complex impact assessment challenges of research for development programs
2. Review literature on quantitative and qualitative approaches to impact monitoring and evaluation relevant to the assessment challenges identified in activity 1.
3. Run a workshop to advance conceptualization of an array of credible monitoring and impact evaluation approaches to research for development programs.

Write proposal for the development of qualitative and quantitative methods for impact evaluation including approaches such as case study methods, modelling and innovative approaches for indicator identification and monitoring.

5 Methodology

As described in the section above, the proposal proposed four specific activities: an exercise to identify complex impact assessment challenges and suggest evaluation methods, a literature review, a workshop to share the results and a funding proposal to follow up and apply the recommendations of the SRA.

During implementation the activities were opportunistically modified. The first opportunity was a co-investment in the SRA from the AAS CRP to host an initial workshop at the same time as a CGIAR panel examining NRM research met, providing an opportunity for the project team to interact with the panel. The second opportunity came through the discovery of an existing literature review contained in a DFID working paper: Stern, H., N. Stame, H. Mayne, K. Forss, R. Davies and B. Befani (2012). Broadening the Range of designs and Methods for Impact Evaluations, DFID Working Paper 23. London: DFID. Available at <http://www.dfid.gov.uk/R4D/Output/189575/Default.aspx>.

As a result activities one and two were merged into a single new activity whose deliverable was a position paper.

Revised activities 1 and 2

The method is described below:

Review literature on quantitative and qualitative approaches to impact monitoring and evaluation relevant to the assessment challenges identified in activity 1.

- Definition of terms and concepts, including what this study takes to be NRM programmes/initiatives (complex farming/resource management systems).
- Based on the DFID Report, develop a framework for thinking about and designing NRM impact evaluations. The framework would:
 - Set out the defining attributes of NRM interventions
 - Discuss the kinds of evaluation issues appropriate to impact assessments in complex farming systems, with particular attention to the DFID working paper causality arguments and how they can apply more specifically to impact pathways that CGIAR now uses.
 - Discuss impact evaluation with respect to the setting of objectives, in particular the danger of confusing stretch objectives (e.g., reaching 250 million people) with outcome targets
- Although mainly focussed on NRM seek to identify where the framework could help genetic improvement CRPs with the key evaluation challenges that they face.
- Outline the kinds of evaluation designs that could be applied to these interventions. This can include discussion on relevant monitoring and baselines / benchmarking to support such designs.
- Explore the key features of the generic impact pathways (theories of change) that NRM interventions comprise.
- Examine three ongoing NRM research program interventions, the AusAID-funded African Food Security Program and the Ganges Basin Development Challenge program of the Challenge Program on Water and Food and the Aquatic Agriculture Systems CGIAR Research Program, and discuss the kinds of approaches that they might consider in undertaking an IA within this broader IE framework.
- Review of existing evaluations to see which are the closest to what we are recommending for the two on-going NRM interventions and a discussion of why

the gap (if one is found), and what practically needs to be done to implement the designs and approaches the WP is recommending.

- Based on the proposed framework, make recommendations on how to improve NRM-IE..

3. Revised activity 3: two workshops to advance conceptualization of an array of credible impact evaluation approaches to research for development programs.

This activity was modified with the addition of a project start-up workshop from a co-investment from the AAS-CRP. The workshop objectives and outputs are described in the following section.

4. Proposal for the development of impact evaluation approaches, including new methods, modelling and innovative approaches for indicator identification and monitoring.

The position paper and workshops have provided inputs to the development of a funding proposal which will support the design and trial implementation of a 'good enough' monitoring, evaluation and impact assessment system which can address the multi-dimensional nature of the research for development program with a mix of approaches that are mutually supporting, and sufficiently rigorous to be credible to relevant stakeholders including donors, policy makers and program managers.

6 Achievements against activities

Activities 1 and 2 were modified during project implementation. A literature review appropriate to the intent of activity 2 was published by DFID early in the life of this SRA. As described above two of the authors of that working paper were contracted to write a position paper with recommendations for conducting learning focused impact evaluation for complex NRM R4D programs. The authors prepared a draft version of the paper that was discussed during a project workshop. Further comments were received from the NRM IA community of practice. The position paper will be concluded in early 2013. A draft version is currently ready. Its recommendations are reproduced in the following section.

Activity 3: The project organized two workshops. The reports of the two workshops are listed in the appendix and are available for download. The first workshop was held February in WorldFish Penang in conjunction with a meeting of the Stripe Review panel of the CGIAR evaluation of NRM research. The workshop was based on the premise described in the following two paragraphs reproduced from the workshop report.

The CGIAR system is relatively good at understanding and assessing the impact of commodity research but less so with NRM research. The NRM CRPs therefore provide an opportunity for the CGIAR to tackle the NRM impact challenge collectively through the conceptualization, planning and implementation of these new programs. This is especially so in places where NRM CRPs are working in the same locations with the same partners, and where the need for shared and coherent approaches is therefore especially important. For example, sharing baseline data will avoid different research teams asking the same farmers the same questions over and over again.

Questions regarding NRM research and impact are being considered by the ISPC Stripe Review of NRM in the CGIAR and we expect the review will provide guidance on impact assessment in the CRPs. This exploratory workshop, held in conjunction with the Stripe Review, was designed to contribute to this discussion and initiate collective action amongst the CRPs to address the NRM impact challenge. Eleven people from four CRPs, ACIAR and CSIRO, met on the 14 and 15 February 2012 in Penang, Malaysia. We discussed the specific issues regarding impact assessment for NRM CRPs and the potential for collaboration on specific actions. The main issues addressed were presented to the Stripe Review panel.

Also from the workshop report, the participants agreed on the following conclusions:

- The NRM-type CRPs have a crucial role to play to deliver on the aspirations of the CGIAR's strategic results framework with its emphasis on delivering impact to the 1 billion poor.
- The NRM impact challenge is clear and pressing.
- More integrated monitoring, evaluation and impact assessment is the key to tackling this challenge. Monitoring and evaluation has the potential to test incipient impact pathways and foster the learning necessary for CRPs to exploit emerging opportunities to put research into use. Impact assessment, both ex ante and ex post, has a crucial role to maintain and build the space for NRM research in the CGIAR.
- The recent mainstreaming of theory of change thinking in the CGIAR is welcome.
- Theory of change, that makes research to outcome to impact pathways explicit, is the key 'boundary object' around which the integration of monitoring, evaluation, communications, uptake and impact assessment can happen, and through which M&E-for-learning can reframe itself as research.
- There is a need for a learning alliance to link up people working on achieving and assessing NRM impact across the CGIAR. Workshop participants will form the core of the learning alliance in which work groups will pursue specific interests while reporting and sharing what has been learned with all learning alliance members.

The NRM Stripe Review Panel welcomed the outcomes of the workshop including the setting up of the NRM Impact Learning Alliance.

A second workshop was held at WorldFish Penang in September. The objectives of the workshop were the following:

- To agree on a framework for NRMR IE.
- To identify priorities for strengthening NRMR IE in ACIAR, CSIRO and participating CRPs.
- To develop an action plan for strengthening NRMR IE in participating CRPs.

The final workshop session focused on defining and agreeing upon the next steps the group should take to build towards an action plan for strengthening NRMR IE. The following steps were agreed upon:

- Development of the SRA into a full proposal.
- A workshop report to be completed and shared.
- A proposal for a communication strategy for the position paper.
- Ideas for inter-CRP collaboration on capacity building.
- Presentation of the AAS approach to IE to EIARD.
- Sharing IDOs with other CRPs.

Activity 4: Write proposal for the development of qualitative and quantitative methods for impact evaluation including approaches such as case study methods, modelling and innovative approaches for indicator identification and monitoring.

The proposal was submitted to ACIAR.

7 Key results and discussion

Key results are contained in the position paper and in the creation of the NRM IA community of practice.

The text below, lifted from the position paper, notes that natural Resource Management Research Programs operate in a complex setting involving multiple partners, interactions between natural resource systems and human efforts, and involve multiple intervention strategies, and aim at outcomes and impacts that are often long-term. All this implies a complex causal relationship between the activities undertaken and desired outcomes and impacts.

There is therefore a need to better understand what can realistically be said about causality in these complex situations, a need to recognize and examine contribution rather than simply seeking attribution. NRMR programmes need to be seen as contributory causes recognizing that a number of other supporting factors are also needed for desired effects to be realized. And given the complexity, it is also important that attention is paid to understanding how outcomes and impacts are brought about, not just whether they are.

Understanding impact evaluation in such a complex setting must start from appropriate evaluation questions. The Position Paper argues that as NRMR programmes and interventions are only one determinant of outcomes and impacts, particular attention should be directed to how evaluation questions are formulated.

Key evaluation questions should be about what difference the programme is making (i.e., the contribution being made), about understanding the progress being made and why results are occurring, and about the learning that is occurring. This is distinguishable from the kinds of evaluation questions that are appropriate for more straightforward interventions such as: Did our programme cause the intended change? The Position Paper suggests a framework for defining evaluation questions that addresses both the outcomes and processes of change; and tries to explain how change occurs in different settings and can be generalised or scaled-up.

Answering these kinds of evaluation questions frames the kind of evaluative enquiry that is needed and ultimately the designs and methods that are suitable. The Position Paper outlines a range of possible designs and methods.

Theory is especially important when an evaluation attempts to explain why some programmes succeed and others do not. The Position Paper therefore proposes using well thought out and structured theories of change, that make clear how programmes are expected to achieve their goals and do so by clarifying their underlying causal assumptions. This extends beyond how more simple impact pathways and logic models are used. Theories of change can be useful for developing monitoring systems, designing surveys and interviews guides, building contribution claims and identifying weaknesses in data and evidence.

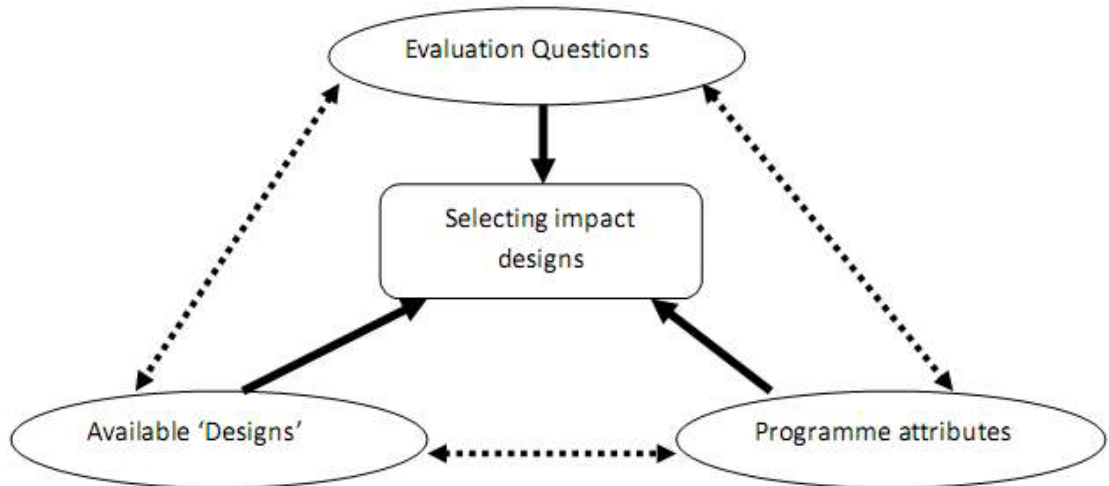
The Position Paper also considers the characteristics or 'attributes' of NRMR programmes. The complex ways NMR combines different types of strategies, over extended periods of time and in diverse settings adds to the challenges that policy makers and evaluators face. Unpacking this complexity also has implications for how Impact evaluations should be designed.

Against this background, a number of design approaches are considered and these are further refined by looking at design issues for several specific cases:

- the Aquatic Agriculture System CGIAR Research Programme,
- the Ganges Basin Development Challenge of the CGIAR Challenge Program on Water and Food

- the African Food Security Initiative of the Australian Center for International Agricultural Research

The design process is summarised in terms of an Evaluation Framework, where the necessary steps to prepare an Evaluation Framework are illustrated in the figure below.



Building on the 'evaluation questions portion of framework the position paper provides discussion and a summary of tools, methods and design implication for different evaluation questions. The summary is replicated in table 1 below.

Table 1: Summary of Tools, Methods and Design Implications for Evaluation Questions			
<i>Key Evaluation Question</i>	<i>Related Evaluation Questions</i>	<i>Underlying Assumptions and Requirements</i>	<i>Suitable Tools, Methods and Designs</i>
Is the rationale for the intervention and its design still sound?	<p>To what extent are the goals of the programme still relevant?</p> <p>Does the programme design and implementation continue to be realistic and supported by current evidence and practice? Is the theory of change still sensible?</p> <p>Are there alternative strategies that should</p>	<p>The programme comprises a coherent set of activities with common aims.</p>	<p>Surveys/interviews</p> <p>Document review</p> <p>Literature review</p> <p>Context analysis</p> <p>Logical analysis</p>

Table 1: Summary of Tools, Methods and Design Implications for Evaluation Questions			
<i>Key Evaluation Question</i>	<i>Related Evaluation Questions</i>	<i>Underlying Assumptions and Requirements</i>	<i>Suitable Tools, Methods and Designs</i>
	now be used?		
What has been learned about implementation?	<p>What has been learned about how the NRM programme has been implemented?</p> <p>How has the implementation contributed to the results?</p> <p>Can implementation lessons learned be transferred elsewhere?</p>	<p>There was a strategy behind implementation.</p> <p>Implementation was modified as circumstances and understanding changed.</p>	<p>Surveys/interviews</p> <p>Document review</p> <p>Literature review</p> <p>Context analysis</p> <p>Logical analysis</p>
What results have been realized?	<p>What outputs have been delivered?</p> <p>What related outcomes have been observed?</p> <p>What related impacts have been observed?</p>	<p>The different levels of results can be reliably specified and measured.</p>	<p>Surveys/interviews</p> <p>Document review</p> <p>Data base review</p> <p>Observations</p> <p>Monitoring data</p>
To what extent can a specific (net) impact be attributed to the intervention?	<p>What is the net effect of the intervention?</p> <p>How much of the impact can be attributed to the intervention?</p> <p>What would have happened without the intervention?</p>	<p>Expected outcomes and the intervention itself clearly understood and specifiable</p> <p>Likelihood of primary cause and primary effect</p> <p>Interest in particular intervention rather than generalisation</p> <p>The intervention can be manipulated</p> <p>Sufficient numbers (beneficiaries, households etc) for statistical analysis</p>	<p>Experimental designs</p> <p>Statistical studies</p>
Has the intervention made a difference?	<p>Was the intervention likely a contributory cause?</p> <p>What role did the intervention play?</p>	<p>There are several relevant causal factors that need to be disentangled</p> <p>Interventions are just one</p>	<p>Experimental designs</p> <p>Theory based evaluation designs, e.g.</p>

Table 1: Summary of Tools, Methods and Design Implications for Evaluation Questions			
Key Evaluation Question	Related Evaluation Questions	Underlying Assumptions and Requirements	Suitable Tools, Methods and Designs
		part of a causal package Supporting factors can be identified	contribution analysis Case-based comparable designs, e.g. QCA
How and why has the intervention made a difference?	How have the impacts come about? For whom has the intervention made a difference? Has the intervention resulted in any unintended impacts?	Interventions interact with other causal factors An adequate theory of change for the intervention can be developed: Supporting factors can be identified Understanding how supporting and contextual factors connect intervention with effects	Theory based evaluation designs, e.g., 'realist' approaches and contribution analysis Participatory approaches Case studies
Will the intervention continue to work?	Is the intervention and its benefits sustainable? What are the future estimated benefits from the intervention?	The benefits from the intervention will continue to be realized Future benefits can be reliably estimated?	Scenario approaches Economic modelling
Will the intervention or elements of it work elsewhere?	Can this intervention as a 'pilot' be transferred elsewhere and scaled up? Is the intervention sustainable? What generalisable lessons have we learned about impact?	What has worked in one place can work somewhere else Generic understanding of contexts e.g. typologies of context Innovation diffusion mechanisms	Participatory approaches Natural experiments Synthesis studies Scenario studies

The position paper reviews the examples of complex NRM programs. The review is filtered through the discussion of the selection of existing methods, evaluation questions and attributes. That discussion is summarized in table 2 below, replicated from the report.

Table 2: NRMR programme attributes and their implication for evaluation designs		
Attributes	Evaluation Challenge	Design Implications
<i>1. Complex ecosystem interactions mediating social and ecological systems relationship</i>	Traditional (non-NRMR) evaluations are often able to simplify the role of ecosystems in defining the impact of particular research. In the case of NRMR, however, these ecosystem interactions are likely to be crucial to: the means by which the research has an impact; the nature of that impact; the magnitude of the impact; the causality involved; and the stability (or longevity) of the impact. Ecosystems are often subject to complex, non-linear and threshold driven responses to particular interventions.	This has substantive implications for: the TOC underlying the evaluation; the understanding of causality in the system (even the conventional 'counterfactual' approach becomes more complex here); the nature of data collections; and the role that explicit analysis of uncertainty needs to play in the evaluation. One essential challenge will be to incorporate the scientific knowledge of many relevant disciplines in the evaluation process.
<i>2. Frequent absence of market based coordination of activities around the use (and conflict resolution in that use) of natural resources</i>	In traditional (non-NRMR) evaluations, market prices (appropriately interpreted) often form the starting point for estimating value. The absence of markets (and in some cases associated property rights) provides a challenge to valuation and the processes by which research outputs are adopted (market prices being a common signal to adoption in many other forms of research).	Evaluation design needs to account for the ways in which property rights over resources have been traditionally defined and the associated 'institutions' that mediated resource use in the communities affected. Put another way, NRMR will take place within an existing complex dynamic of methods for resolving resource use issues. A range of different forms of data collection will be needed. Participatory approaches, and understandings of collective responses may become relatively more important.
<i>3. Multi stakeholder participation and coordinated action in socio-ecological systems</i>	Multiple stakeholders and beneficiaries need to coordinate their behaviours and policies in order to implement programmes and to sustain impacts in socio-ecological systems. The processes of achieving collective action as well as	The evaluation will require inputs from beneficiaries and stakeholders. Methods that evaluate collective action are also needed – probably (following Poteete, Janssen and Ostrom 2010) focusing on trust, informal relationships, networks, incentives, information and ownership. The challenge will be to link these processes to the sustainability of non-

Table 2: NRMR programme attributes and their implication for evaluation designs		
Attributes	Evaluation Challenge	Design Implications
	the outcomes need to be evaluated.	material outcomes such as new forms of governance and their value for conflict resolution.
<i>4. Multi-levelled (operating at farm, landscape, regional and global level)</i>	In multi-levelled programmes with social-ecological interactions across scales, the outcomes and impacts at each level have to be evaluated with appropriate methods for each level as well as aggregating for global level impacts.	A 'nested' design deploying methods appropriate to each level will be needed. This could include different Theories of Change at different levels; a comparative or experimental design at farm-level; comparative case-studies at landscape level; and a statistical analysis at regional and global levels. Understanding the links between these different levels may require a further set of 'systems' designs, including modelling.
<i>5. Uncertain, variable and interacting trajectories for impact</i>	Due to the interaction between social and ecological systems NRMR programmes deal with huge variations in the impact trajectories of the systems they engage in. Further, implementation trajectory changes need to be tracked rather than assessed at a single moment in time.	Tracking change over time is likely to require non-standard monitoring and evaluation approaches. These could include longitudinal methods – e.g. longitudinal case studies, panels, time series data etc. There will also need to be opportunities to revise initially formulated Theories of Change.
<i>6. Systems integration required for resilience and sustainability (related to 4 and 5)</i>	NRMR programmes often combine research on genetic technologies and farming systems/institutions together with assessments of environmental and livelihood consequences. The success of NRMR is often understood as trade-offs between production, environmental and social effects. For sustainability, a holistic approach is required to see the longer term impacts for resilience and sustainability.	A balanced evaluation will need to address how all the elements are combined – there is a tendency to focus on one element only. Framing in terms of 'innovation systems' may be appropriate; so will methods and models that assess trade-offs and can provide holistic understanding.
<i>7. Contextualized knowledge is vital</i>	NRM programmes are often place-based, focusing on a particular ecosystem and population interacting with it. Different 'starting-conditions'	Even though contexts are not standardised they are likely to fall into certain types. Contexts should therefore be clustered into typologies to achieve limited generalisation – a strength of

Table 2: NRMR programme attributes and their implication for evaluation designs		
Attributes	Evaluation Challenge	Design Implications
	<p>will shape the implementation and potential results of programmes. Contextual characteristics may also include history of prior initiatives.</p> <p>Challenges arise in evaluating how generalizable and replicable the programme is.</p>	<p>using 'realist' evaluation approaches. This also implies building a comparative element into programme selection and design. When the elicitation of local knowledge is critical, assessing the elicitation process and how this knowledge informs design and implementation will be important. Knowledge elicitation usually depends on participatory engagement and developing models (as for expert systems). Local histories will be useful to identify previous related initiatives and endogenous developments.</p>
<p>8. <i>Unpredictability and Emergent Outcomes (related to 6)</i></p>	<p>The complex interactions of social and ecological systems in NRMR mean that outcomes cannot be predicted. The challenge is to be able to capture the unexpected outcomes and impact.</p>	<p>For elements of interventions where this is the case, designs built on developmental approaches (Patton 2011) and use of real-time evaluation with frequent feedback in needed to learn what is happening.</p>
<p>9. <i>Operates in areas of limited/little prior or reliable knowledge</i></p>	<p>NRMR research programmes operate on scientific frontiers. New knowledge is an important output of NRMR and is equally important to make 'impact' more likely</p>	<p>Baseline efforts to systematise existing knowledge and 'knowledge in use' should be followed through with tracing the use of new knowledge in practice by different stakeholders. The evolving knowledge base partly explains why not all decisions about evaluation design can be taken at the outset, reinforcing the need for an iterative or staged evaluation design.</p>
<p>10. <i>Institutional concerns</i></p>	<p>Changes are expected not only in individuals but in institutions.</p>	<p>Include institutions relevant to system change from the outset. Pay particular attention to barriers to sustainability and conduct repeat case studies at critical junctures in the implementation process.</p>

8 Impacts

This SRA has not achieved any impacts. Its main output is a position paper recommending pathways to improve the quality of impact evaluation on hard-to-evaluate NRM research for development programs. Adoption of these recommendations could result in impact evaluation that better captures the impacts of NRM R4D programs, revealing their contributions to project or program goals. The hypothesis of the SRA was that NRM R4D programs are evaluated using methods that cannot capture the multiple dimensions of their contributions to project or program goals and so their real impact is undervalued. Better evaluation could capture their true contribution, giving investors better signals of their returns on investment. This may result in increased investments in this type of program.

9 Conclusions and recommendations

The SRA was successful in exploring methods to broaden the range of impact evaluation methods useful for complex natural resource management research for development programs. The project also was instrumental in creating a community of practice interested in applying and promoting these new recommended approaches and methods.

There are two main groups of recommendations, those arising from the position paper and outcome focused actions arising from the communication strategy to encourage uptake of the recommendations from the paper.

The position paper recommends that those evaluating NRMR-type programmes should consider:

- Seeing these complex programmes/interventions as contributory causes, as part of a causal package of events and conditions which together are expected to be sufficient to bring about the desired outcomes and impacts.
- Developing mature theories of change, with assumptions, risks and unintended effects. Indeed, there is probably a need for several nested theories of change for a programme from different perspectives and for different levels.
- Ensuring that there is a robust monitoring system in place to track progress and revise the theory of change as experience and insight is gained, and to provide baseline and ongoing data for evaluation.
- Carefully articulating an essential set of evaluation questions of interest, including those focussing on the causal links between the NRMR programme/intervention and the expected outcomes and impacts.
- Identifying and understanding the attributes of the specific intervention being evaluated and their implications for evaluation.
- Developing appropriate mixed methods evaluation designs based on the evaluation issues to be addressed and the attributes of the intervention, keeping in mind the timing and resources available for the evaluation.
- While the high-level SLOs need to be kept in mind, focussing on intermediate development outcomes and making a link to the SLOs with logic and prior evidence.
- Building on the existing evaluation literature, in particular on evaluating advocacy, evaluating capacity building, and the research link to policy influence.

To carry forward these recommendations a communication strategy is proposed. The elements should consider the following (taken from Annex 3 of the second NRM workshop report).

The position paper develops a framework for strengthening impact evaluation of NRMR. If the ideas are to be of benefit for the CGIAR, then they need to take hold and gain support, and this requires a communications strategy, which itself is part of a broader strategy to build consensus around the framework.

The strategy targets four main groups: donors, the CGIAR (in particular, the decision-making bodies), selected partner organizations (e.g., IFAD) and the field of evaluation. The strategy will be built on three products: the position paper, a shorter Institutional Learning and Change brief and a communiqué. The communiqué will be based on a presentation to be made to EIARD (European Initiative on Agricultural Research for Development) on October 11 and feedback received there.

Engagement with donors will begin with an invited presentation to EIARD on the AAS approach to impact evaluation. We will take this opportunity to present our emerging consensus captured in the 10 agreed-upon position paper propositions (listed in section 7 above).

Engagement with CGIAR should be multi-layered, targeting the consortium, the Standing Panel on Impact Assessment (SPIA), CRP leaders and evaluation staff, and an internal-to-AAS campaign as part of building a knowledge-sharing and learning culture in the program. We'll use a range of approaches, including constructing a mailing list and sending the position paper to people on the list.

Opportunities should be sought to present the position paper framework and how it is being applied in CRPs at meetings and conferences within and outside the CGIAR. Dialogue will be sought with the new CGIAR independent evaluation arrangement (IEA) and consortium monitoring staff. Opportunities to use the framework with CGIAR key boundary partners will also be explored.

The position paper should be publicized more broadly through postings on evaluation discussion groups; for example, discussion groups on outcome mapping and on M&E (<http://mande.co.uk/>).

The NRMR impact COP has an important role to play in promulgating the line of thought laid out in the position paper. Members are already bringing the thinking into their own CRPs and COPs through sharing it with staff and incorporating it in process design.

Finally, the COP should use social media to point people towards websites that contain output, including the position paper and PowerPoint presentations.

10 References

10.1 References cited in report

Mayne, j. and E. Stern. 2012. Impact Evaluation of CGIAR NRM Research Programmes: A broader view. Position paper. 84 pp. (draft version: October 2012)

Stern, H., N. Stame, H. Mayne, K. Forss, R. Davies and B. Befani (2012). Broadening the Range of designs and Methods for Impact Evaluations, DFID Working Paper 23. London: DFID. Available at <http://www.dfid.gov.uk/R4D/Output/189575/Default.aspx>.

10.2 List of publications produced by project

CGIAR Research Program on Aquatic Agricultural Systems. (2012) Strengthening Impact Evaluation in Natural Resource Management Workshop Report, 4-5 September 2012, Penang, Malaysia. CGIAR Research Program on Aquatic Agricultural Systems. Penang, Malaysia. Workshop Report: AAS-2012-22.

CGIAR Research Program on Aquatic Agricultural Systems (2012) CGIAR Research Program Collaboration on NRM Impact Assessment: Workshop Report, 12-14 February, Penang, Malaysia. AAS-2012-04

Mayne, J. and E. Stern. 2012. Impact Evaluation of CGIAR NRM Research Programmes: A Broader View. Position paper. 84 pp. (draft version October 2012).