



Natural resources management: challenges and way forward for the new CGIAR – a Stripe Review

Background

The importance of the conservation and sustainable management of natural resources¹, has been recognized as a central concept in CGIAR since the late 1970s, enhanced by the creation or adoption into the system of Centers with specific mandates for natural resources management in the 80's and early 90's.

Within the system, Natural Resources Management Research (NRMR) is often referred to as research aiming to *generate outputs that help maintain or improve the natural resource base for agriculture and/or mitigate the negative environmental side-effects of agricultural production*², or *aiming to maintain or raise productivity of resource use in a sustainable manner, that is, over the long term*³. The concept then evolved into an integrated NRM (INRM), offering *a way of doing development-oriented research that aims to simultaneously reduce poverty, increase food security and achieve environmental protection*⁴. CGIAR addresses the imperative for the sustainable use of natural resources in the context of poverty alleviation, food security and provision of socio-economic and other welfare benefits. For the purpose of this Study, NRMR is defined as the research that produces effective technologies, policies, systems and social organisation or that will reduce the cost of:

- ❖ Soil water and nutrient management at all scales from the field to the landscape or water catchments;
- ❖ Sustainable production increases;
- ❖ Efficient allocation and use of land and resources;
- ❖ Optimising the balance amongst multiple ecosystem functions.

While the focus and main added value of CGIAR research has been in food production, the System increasingly recognized the close linkage between environmental health and conservation and agriculture productivity, and consequently adopted NRM as the second pillar of its research. This recognition is certainly central to any 21st Century Green Revolution; a revolution which would entail a new conscience of how rural development occurs and a far more resource- and input-efficient agriculture. All certainly agree that this should be the ultimate goal but, what is the role of the research, and of the CGIAR, in achieving this? What are the factors that would lead an NRM research to achieve impact at scale?

At a time when the System is developing programs which simultaneously address, productivity, poverty and the sustainability of the environment, learning from Centers' past and current experience and from cutting edge international research outside the System is critical to lay out strategic considerations and priorities for an effective NRM research agenda within the CGIAR Research Program (CRP) portfolio.

The CGIAR Independent Science and Partnership Council (ISPC) has a mandate for four areas: i) foresight studies, ii) mobilizing science iii) impact assessment and iv) program evaluation. As

¹ The geophysical resources of water, soil and its productive qualities, intermediate and long term carbon stocks, biodiversity of the managed landscapes, and the stability and resilience of the ecosystem of which agriculture is a part (CGIAR Interim Science Council and CDC on INRM (2003))

² <http://impact.cgiar.org/nrm>

³ ICRISAT (2005)

⁴ CGIAR Interim Science Council and CDC on INRM (2003)

part of its mandate on foresight study and the provision of advice on the development of the future portfolio of CGIAR research, and inspired by the success of the recent “*Stripe Review of Social Science in the CGIAR*”⁵ the ISPC plans to undertake a study aimed at supporting the CGIAR in enhancing the quality of the new NRMR programs.

The Strategic Result Framework (SRF) for the new CGIAR has applied analytical procedures in the formulation of research for development priorities that might be addressed in the new CGIAR portfolio. However, the models used tend to be strong on factors directly impacting production but weak on the natural resource and social system context in which this production has to be achieved. The ability of the CGIAR to achieve impact at scale and under changed climate is closely related to the capacity of getting a better understanding of entire production systems – both agricultural production and the environmental systems within which they are located.

External reviews of the CGIAR and the more recent CGIAR reform process have consistently identified the need for the CGIAR to invest more heavily in research on natural resources systems. A few assessments of CGIAR NRM research⁶ have been already undertaken, reporting some successes but continuing to voice uncertainty as to its impacts at scale; in the specific the independent meta-evaluation of CGIAR⁷ was reporting that “*the absence of clear, quantitative evidence of impact to date does not imply the absence of current, much less likely future impact; it merely means we simply do not know yet*”.

With its leading role in coordinating public investment in international research and development (R&D) on agriculture, the CGIAR should be in an ideal position to provide society with International Public Goods, tools and methodologies to reach the increasing global food demand while conserving critical ecosystems and environmental functions. Is the CGIAR following the correct approach and investing in the right direction to do so?

Aims of the study

The present study “*Natural resources management: challenges and way forward for the new CGIAR – a Stripe Review*” is designed to provide the Consortium, the Centers and the Donors with perspectives on the factors which influence achieving impact at scale from NRM research, sharing insights and information helpful to assist in developing quality programs. It does not aim at *evaluating* the research, but at identifying factors (learning from the System or from cutting edge science outside CGIAR) that might *facilitate* its design and implementation in the context of the CGIAR’s mandate to produce international public goods within a strategic results framework. The review will focus on agricultural productivity-related natural resource management and not just the management of resources *per se*.

The Study will:

- ❖ Describe the evolution of NRMR and INRM in the CGIAR and take stock of the most recent (2005-2010) research;
- ❖ Highlight different typologies and approaches of NRMR within the CGIAR;
- ❖ Identify a list of general (not CGIAR-specific) factors leading to impact at scale from NRMR;
- ❖ Present considerations for an effective way forward for NRMR in the new CGIAR, also addressing the question of the extent to which investments in NRM research are justified.

⁵ CGIAR Science Council (2009)

⁶ Barrett, C.B. (2003); ICRISAT (2005); CGIAR SC (2003), CGIAR SC (2006); CGIAR SC (2007); etc

⁷ Barrett, C.B. (2003).

The study will also attempt to indicate how the research outputs are disseminated and the way partnerships contribute to achieving production and environmental goals and desired and social/policy changes. Important reflections should be made as to whether the CGIAR should contribute broadly to the entire Research and Innovation System or if, on the other hand, it should focus only on the parts for which it has a comparative advantage.

Outputs

Main outputs of the study will be:

1. Four issues papers reflecting, each from a different perspective on i) the role of research in NRM, ii) CGIAR comparative advantage and iii) niche in NRMR, and iv) factors determining impact at scale from NRMR. One of the issues papers will also undertake to look across the CGIAR Research Programs (CRPs) from NRM perspectives. The issue papers will feed into the Science Forum 2011 (see output 3) and the “*NRM Stripe Review workshop*” organized on the margins of the event (16 October 2011) (see output 4);
2. A background working paper “NRMR evolution in CGIAR”, reporting the evolution of NRMR and INRM in CGIAR, hints on investment trend, NRMR in the past 5 years (2005-2010), results of the bibliometric study commissioned for the Stripe Review, examples of research that led to impact at scale and others where the investment did not bring about the expected results. The working background will feed into the “*NRM Stripe Review workshop*” (see output 4 below);
3. A parallel session (“*Sustainability Science: Are new arrangements for scientific partnerships needed to address the integrated NRM targets of the reformed CGIAR?*”) at the Science Forum (17-19 October 2011, Beijing) bringing in leading NRM researchers to debate emerging international issues;
4. An “*NRM Stripe Review workshop*” on the margins of the Science Forum aiming at discussing preliminary results of the Study and provide inputs for drafting a strategic way forward for CGIAR in NRMR (see output 5);
5. A strategic paper designed to assist in focusing the program and defining the role of the CGIAR, within the context of global research, in the production of natural resource management outcomes at scale. Reflections will be made on the issue of how the CGIAR should contribute to the entire Research and Innovation System or if it should focus only on the parts for which it has a comparative advantage. This paper will represent the final and main output of the NRM Stripe review.

Audience

Main audience for the Study is the management of the 15 CGIAR Centers. The Consortium, the CGIAR donors and partners are anticipated additional audiences.

Methodology

The NRM Stripe Review will be undertaken under the guidance of ISPC Member, Prof. Jeffrey Sayer, School of Earth and Environmental Sciences, James Cook University, Cairns, Australia, through the contributions of an *ad-hoc* panel (the Study Panel) and the support of the ISPC Secretariat.

The study will mainly draw upon the large amount of material that the ISPC has in its archives from EPMRs, Medium-term Plans and submissions of examples of impact for the performance management system and on expert knowledge. Four external authors (the Study panel) will put the CGIAR NRMR into a global context and will prepare issues papers on different dimensions of NRM research looking at examples both inside and outside the CGIAR. A bibliometric study (2005-2010) of NRM research of the 15 Centers will also be conducted.

Even though maintaining its independent nature, the study will have an open and participatory approach, and will liaise with Centers and Challenge Programs in different steps, the *NRM Stripe review workshop* (16 October 2011) being the first consultation.

The NRM Stripe Review panel

The *NRM Stripe review panel* (or Study Panel) will consist of four members, independent from the CGIAR and selected based on relevant knowledge of Natural Resources Management, agriculture productivity and ecosystem conservation/management nexus, sustainable development and their familiarity with the CGIAR system and Centers. Collectively the ad-hoc pool of experts would have the knowledge on different aspects of NRM (forestry, water, biodiversity, nutrients, etc), agriculture productivity (e.g. crops, livestock), boundaries and nexus agriculture/environment, and socio-economic policies. The experts will bring in the Study relevant knowledge on cutting edge research from outside the System. A gender balance and organization type balance (e.g. International research organization, University, NGO, International development organization) would also be beneficial. The ad hoc pool of experts will collaborate with the Study in both phases:

1. In phase 1 the four authors will be asked to contribute to the design of the NRM Stripe Review, to provide feedback on the concept, overall approach and steps for its implementation, to support the ISPC Secretariat for the collection and preparation of background material, to draft one issues paper each and to act as resource persons at the *NRM Stripe review workshop* as well as during the Science Forum;
2. In phase 2 some (or all the) members will be requested to carry on their support to the NRM Stripe Review, drafting of the strategy paper on the potential way forward for NRM in CGIAR and leading the potential further consultations with the Centers.

Steps of the NRM Stripe Review

The study will be undertaken in two phases, Phase 1: December 2010 – October 2011 and Phase 2: October 2011 – November 2011/February 2012 and through the steps reported in the table 1.

Table1. Steps of the NRM Stripe Review

#	Step	Lead actor	Timeframe		
1	Study design	ISPC Secretariat (feedback from Panel)	Dec 2010 - Mar 2011	PHASE 1	LIAISON WITH CENTERS
2	Literature review / Desk Study / Bibliometrics study	ISPC Secretariat (feedback from Panel)	Jan - Sep 2011		
3	a) Preparation of background working paper ; & b) Preparation of 4 issues papers	ISPC Secretariat and Panel	Apr – Sep 2011		
4	a) NRM workshop, interim feedback from Centers and map out next stages b) Parallel session at the Science Forum	ISPC Secretariat, with Panel and Centers Lead scientist, Panel	Oct-11		
5	Fine tuning of the issues papers and the background working paper	Panel and ISPC Secretariat	Nov-Dec 11	PHASE 2	
6	Draf strategy paper on potential way forward for NRM in CG	Panel and ISPC Secretariat	Nov-11 - Feb 12		

PHASE 1

Step 1. Study design (Dec 2010-Mar 2011);

The design of the NRM Stripe Review started in late 2010. January and February 2011 will be mainly used for ISPC internal brainstorming, followed by discussions at the ISPC meeting (Rome, 1-4 March 2011). A “kick-off” brainstorming meeting (through teleconference) with the NRM Stripe Review Panel will be held in mid March to discuss the draft concept note, which will then be circulated to all Centers and Challenge Programs for feedback and thoughts at the end of March.

Step 2. Literature review / Desk study/ Bibliometric study (Jan – Sep 2011)

The Study intends to utilize, as much as possible, already available material through desk study and literature review. The ISPC secretariat will collect and review e.g. i) Summaries and/or assessments of CGIAR NRM research⁸; ii) External Program and Management Review (EPMR) (of centers/programs); iii) relevant material Centers have already uploaded on the websites or shared with the ISPC; iv) assessments of outcomes and impacts (already submitted by the Centers in the framework of the Performance Measurement System, PMS), etc. to extract information on NRM and INRM evolution in the CGIAR system, the typology and approaches of NRM research, main partners, etc.

Within its investigation on the categorization of NRMR in the CGIAR, this stripe review will commission a bibliometric study of publications by CG Centers and Challenge Programs between 2000 and 2010 (inclusive). In addition to the importance of the results per se, the information generated by the bibliometric study will feed relevant information also into the work of the Study Panel. Even though mechanical enumeration of articles and their citation numbers should not become a dominant metric to estimate research output and its quality, the exercise can certainly stimulate interesting reflections. In fact, “peer review publications are important primarily because the peer review system provides a useful, low cost means of quality control and because such publications are an effective means to leverage external science by inducing new research outside the CGIAR in the System’s areas of interest”⁹. The bibliometric study will also provide information on CG publications with high citation rates (“top publications”) and on the percentage of NRM research within these.

A set of stories of NRM research showing impact at scale and examples of research that did not bring about expected results will be selected and used as a learning tool to extract typology of CG NRM research and, especially the potential factors/clever hooks leading to impact at scale. These stories will be identified both through literature review and, in the second phase of the Study, through consultations with the Centers/CP. Ideally a maximum of eight case studies would be chosen, four showing impact at scale (including “unexpected success”) and four sharing lessons that could be learnt from what did not work as expected. The exact number of stories and the criteria for their selection will be discussed and agreed upon in the second phase of the Study and basing on the discussions to be held on the margins of the Science Forum. Centers/CPs will not be asked to draft additional documents but only to share what they consider to be the most representative “stories” on this topic. It is expected that the comparison between the NRMR stories, examining what has worked and what did not work, where assumptions regarding adoption, scale or trade-offs among competing objectives have limited (or magnified) the possibility for CGIAR NRM research to have an impact, would allow the identification of important considerations to enhance the effectiveness of NRM research.

Step 3. Preparation of background working paper and of 4 issues papers (Apr – Sep 2011)

The ISPC Secretariat will synthesize the material collected through the literature review into a background working paper. In parallel, each of the Panel members will draft one issues paper.

The background working paper will aim at reporting on the evolution of the NRM and the INRM in the CGIAR system, sketch NRMR investment trends in the CGIAR, human resources dedicated to NRMR in CGIAR, a preliminary categorization, a stocktaking of the NRM research in the past five years (2005-2010) with main typology, approaches, and frequent partnerships models, and a list of preliminary stories from which to learn factors leading to impact at scale. The document will also summarize recommendations and suggestions on potential role and niche of CG in NRMR put forward by previous assessments. The background working paper will be drafted by

⁸ Barrett, C.B. (2003); ICRISAT (2005); CGIAR SC (2003), CGIAR SC (2006); CGIAR SC (2007); etc

⁹ CGIAR Science Council (2009)

the ISPC Secretariat, reviewed by the leading scientist and share with the panel for feedback. The material will be discussed at the *NRM Stripe Review workshop* and finalized on the basis of the discussions that will take place in that venue.

The Study Panel will be critical to bring in external views on NRMR at international level and how CGIAR could position in and learn from it. They will prepare issues papers on different dimensions of NRM research (e.g. landscapes, use of knowledge, farming systems, multiple scale and overarching policy) looking at examples both inside and outside the CGIAR. The drafting of these papers will be based on the expert's knowledge and on readily available material that might be requested by them. The bibliometric study will also provide additional information for their consideration. In a maximum of 10-15 pages each expert will reflect, from a different NRM angle and perspective, will reflect on: i) role of research in NRM; ii) CGIAR comparative advantage in NRMR; iii) niche in of CGIAR in NRMR; iv) factors determining impact at scale in NRMR. The issues papers will be drafted between April and September and will be fine tuned after the *NRM Stripe Review workshop* (16 October) using the inputs received through the discussions.

Step 4. NRM Stripe Review workshop, interim feedback from Centers and map out next stages & Parallel Session at the Science Forum (Oct 2011);

The Science Forum 2011 (17-29 October 2011, Beijing, China) will be used as a constructive venue also for debates and works on the NRM Stripe Review. With this intention, a *NRM Stripe Review workshop* will be held on the 16 October 2011, to discuss preliminary results of the Study, to map out next stages of the work, to brainstorm and collect inputs from the Centers to draft a strategic way forward for CGIAR in NRMR. Participants will include the designated focal points for the NRM Stripe Review, the Study panel, Chinese NRM scientists and representatives from the ISPC, the Consortium and Fund Council. Approximately 30 participants are expected to attend. The discussions will have clear relevance for several of the CRPs which are engaging with new approaches to NRM. The results of this workshop are expected to feed into various sessions of the Science Forum.

The NRM Stripe Review lead scientist will also be the convener of a parallel session "*Sustainability Science: Are new arrangements for scientific partnerships needed to address the integrated NRM targets of the reformed CGIAR?*" at the Science Forum, where leading NRM researchers will debate emerging issues of global relevance for the research on natural resources and its links to agriculture productivity. The NRM Stripe Review panel members will be among the speakers of the cited session.

PHASE 2

The second Phase of the Study will be delineated during the discussions that will take place on the margins of the Science Forum 2011. The following steps are however tentatively envisioned:

Step 5. Fine tuning of the issues papers and the background working paper (Nov – Dec 11)

At the *NRM Stripe Review workshop* the issues papers will be presented in an advanced status, but not totally finalized, to leave space for small fine-tuning (either as individual papers or in a synthesized document) on the basis of the feedback received during the event and during the overall Science Forum.

Step 6. Draft strategy paper on potential way forward for NRMR in CGIAR (Nov 2011 – Feb 2012)

In this step, the panel (or few of its members) will co-draft a strategic paper "*Natural resources management research potential way forward in the new CGIAR*" designed to assist in focusing the program and defining the role of the CGIAR in the production of natural resource management outcomes at scale for the CG System. The lead scientist and the ISPC Secretariat and members will contribute and assist in the task. Modality for interaction and liaison with the Centers will be discussed in due course.

The strategic paper, its structure and content, will be based on the results of the *NRM Stripe review workshop*, on the experience of and the issues papers drafted by the panel members, on the information collected through the desk study and bibliometric study, and on the inputs from selected ISPC members. Reflections will be made on the issue of how the CGIAR should contribute to the entire Research and Innovation System or if it should focus only on the parts for which it has a comparative advantage. Detailed TOR of the paper will be drafted in due course. Potentially, a writing retreat will be organized to draft (or to put solid basis to) the paper. Details of this retreat will be decided on the basis of the *NRM Stripe Review workshop* results.

LIAISON WITH CENTERS

While keeping its independent character, the Study attempts to be as participatory as possible and to involve the Centers, the Challenge Programs and the Consortium in consultations. Particularly the NRM Stripe Review will be seeking comments on concept note and approach, identification of promising outcomes, impacts and programs, help in obtaining copies of significant publications and lessons learnt and provide feedback on preliminary results.

The liaison will initiate in March 2011, when the draft concept note will be shared with the Centers, and the invitation for nomination of Centers' focal points will be put forward. Overall, the roles of the NRM Stripe Review focal points will consist of i) identification of examples of NRMR in their Center that led to impact at scale and cases where the research investment did not bring about the expected results; ii) sharing of related material already available (e.g. reports, articles, other publications); iii) engagement in the consultation.

Recognizing the already heavy workload on the Centers for the ongoing CRP process and implementation of the previously planned Centers' activities, although focal points will be welcomed to share material they might consider relevant for the Study already starting from April 2011, the first official consultation will be held in October 2011 (at the *NRM Stripe Review workshop*), once the bulk of the CRP drafting work will be concluded.

Important dates for the liaison with the Centers will be:

1. March 2011: the ISPC Secretariat will share the draft concept note and the invitation for the Centers to nominate focal points for the Study;
2. April 2011: the Centers will send nominations of focal points to the ISPC Secretariat. Welcome letters will be then addressed to the designed focal points providing quick update on the progress and tentative future plan of the Study;
3. October 2011: Face-to-face interaction on the preliminary results and on the future steps (*NRM Stripe Review workshop* and Science Forum 2011);
4. November 2011 (tentative): Centers' focal points to share with ISPC Secretariat their most representative NRMR stories where to learn from to extract factors/"clever hooks" leading to impact at scale;
5. Nov 2011/Feb 2012 (tentative): potential further consultations and/or feedback on the strategy paper.

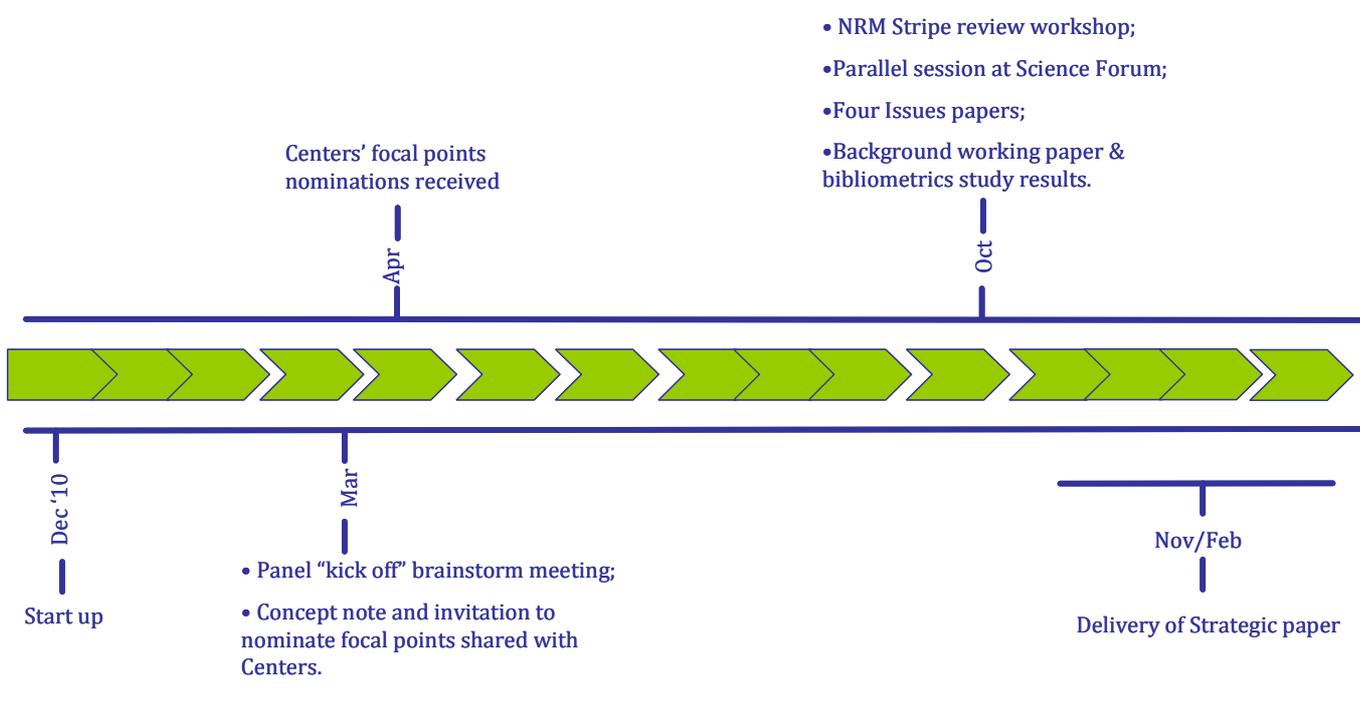
Timeline and milestones

The NRM Stripe Review is planned to run from December 2010 to November 2011/February 2012. Final decision on the delivery date of the main output of the NRM Stripe Review (i.e. the strategic paper) will be taken after the consultations with the Centers at the Science Forum, also considering their level of interest for further involvement.

Table2. Indicative timeline

	Phase 1									Phase 2				
	Dec	Jan'11	Mar	Apr	May	Jul	Aug	Sep	Oct	Nov	Dec	Jan'12	Feb	
Step 1	Study design													
Step 2	Literature review / Desk Study / Bibliometrics study													
Step 3	Background working paper & issues papers													
Step 4									Sessions at SF					
Step 5											Papers' fine tuning			
Step 6											Preparation of strategic paper			
										Liaison with Centers				

Table3. Indicative milestones



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