GCARD Sub-Session P2.2: Landscape Partnerships—Linking Research and Action on Agriculture, Land, Water, and Forests – Session Briefing Paper

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Context – the problems being addressed

Rural land provides the global goods and services to meet this century’s human and environmental needs. In addition to food and fiber production, rural lands are expected to conserve biodiversity, reduce greenhouse gas emissions, produce energy, and support economic development and resilient rural livelihoods.

Poor households and communities are especially dependent on the natural wealth of resources from different parts of their landscapes which contributes the well-being of 100 percent of people living in them - including the 20 percent or so producers of the agricultural products that dominate the agenda of the international research.

Communities worldwide have begun adopting integrated landscape management approaches that work deliberately to support food production, ecosystem conservation and rural livelihoods across landscapes mosaics. These involve diverse approaches: participatory watershed management, biological corridors through farmlands, sustainable land management, landscape restoration, agro-industrial corridors and many others. Hundreds of such initiatives have been documented, as well as many networks to support landscape action. Yet in most cases, the diverse functions of landscapes are fragmented among the mandate areas of different sectoral agencies, different communities of researchers and private businesses. This generates conflicts and lost opportunities for synergy, denying landscapes the opportunity to provide the optimum range of benefits that societies require and many are dysfunctional. Some practitioners still see integrated landscape strategies as “too complicated” rather than useful, structured process to respond more efficiently and systematically to the growing complexity of development constraints and objectives.

While there is rapidly growing interest in research on “landscape approaches”, multi-functionality, cross-scale analysis, etc, there are not so many examples of where these aspirations have been effectively met, as noted in the findings of a recent review of study of natural resource management (NRM) research in the CGIAR. There are still major disconnects between research programs for agriculture, land, water and forests. The emerging CGIAR CRPs aspire to take integrated, holistic approaches to large landscape problems but are still defining their methodologies. Meanwhile, integrated landscape research efforts are only weakly linked to the multi-stakeholder groups seeking to manage their landscapes for the full range of needed products and ecosystem services, and thus are neither contributing adequately to their efforts, nor strongly demand-driven. Stronger and more strategic international agricultural research-for-development (IAR4D) partnerships will be essential to
advance landscape science that supports effective action on the ground.

While researchers working on landscape and ecosystem processes fully recognize the importance of crop intensification and crop researchers recognize the critical role of landscape and ecosystem processes in sustainable and resilient crop environments, there is still not a coherent research framework that links the two in ways that guide research priorities and strategy.

**Current activities presented and discussed in the Session**

IAR4D and its various manifestations that seek to deal with complex issues at a landscape scale are being tested in many places and diverse ways, linking agriculture, land, water and forests:

1. Many of the “Sentinel Sites” for CGIAR Collaborative Research Programs (CRP’s) are being defined as socio-ecological landscapes. [Jeff: add main findings of Sentinel sites review.] Presented at the Landscape Partnerships Session are the:
   a. CRP on Water, Land and Ecosystems
   b. Project on research collaboration for the Aral Sea (CAC)
   c. Project on the Indo-Gangetic Plains Rice-Wheat Consortium
   d. CRP on Forests, Trees and Agroforestry

Other CRPs with a strong anticipated landscape focus (not presented in the GCARD Landscape Partnerships Session) include CRPs on Aquatic Agricultural Systems; Climate Change, Agriculture and Food Security; on Dryland Systems and on Humid Tropics. It is also expected that much of the research in other CRPs will be undertaken in Sentinel landscapes, or in collaboration with the landscape-oriented CRPs.

2. Other international collaborative research networks and partnerships focused on integrated landscapes:
   a. Association of International Research Centers for Agriculture (AIRCA) – a new consortium of nine centers (CABI, CATIE, Crops for the Future, ICIMOD, ICIPE, IFDC, INBAR) on “Sustainable Landscapes” theme;
   b. The Landscapes for People, Food and Nature Initiative’s Working Group on Science and Knowledge Systems, which seeks strengthen the quality of landscape research, improve knowledge systems for supporting integrated landscape management, and catalyze increased support and funding for research on integrated landscapes.

3. Other international research networks and partnerships with a major focus on landscapes:
   a. Ecosystem Services for Poverty Alleviation (ESPA) supported by DFID, NRI (subset of projects in agricultural landscapes in developing countries);
   b. Knowledge Systems for Sustainability (KSS);
   c. Conservation International’s Sustainable Landscapes Research program;
   d. Man and the Biosphere Programme (and the [World Network of Biosphere Reserves](#));
e. Resilience Alliance (social-ecological systems).

4. Other International and national research networks and partnerships integrating agriculture & NRM at farm scale, moving into landscape scale:
   a. Partnerships for Managing Water for Agriculture and Food in ACP countries (e.g., Sustainable Rice Intensification);
   b. Diversified Farming Systems group (University California-Berkeley);
   c. ICROFS (International Centre for Research on Organic Farming Systems);
   d. Brazilian Federation of No-till Associations.

5. There are also strong national research programs on agricultural and forest landscapes whose expertise can be tapped for international collaborative work. Leading countries include:
   a. USA, National Science Foundation [program?]
   b. Australia, CSIRO
   c. German Landscape Research Network [web-link?]
   d. Netherlands, Wageningen University and Sustainable Landscapes [name?]

### Intended outcomes

To build stronger and more strategic international agricultural research-for-development (IAR4D) partnerships to advance landscape science that supports effective action for integrated landscapes on the ground, including:

1. Effective engagement with the diverse sectors that influence agricultural landscapes;
2. Alignment and collaboration with “boundary organisations” between research and practice, such as IUCN, EcoAgriculture Partners, et al;
3. Clearly articulated “Landscape Approach to Development” that is consistent with efforts of sustainable intensification in specific parts and products in the landscape, and is fully reflected in the CGIAR Strategy and Results Framework;
4. More effective and efficient multi-disciplinary, multi-sectoral partnerships, based on agreed criteria and a systematic assessment of best practices and lessons learned;
5. Improved research frameworks and methodologies for understanding multi-functional landscapes and identifying interventions to improve performance at multiple scales;
6. Compatible datasets across landscapes enabling cross-site comparative analysis;
7. Better understanding of the attributes of natural resource systems and landscapes that confer resilience and how such resilience can be enhanced;
8. Successful “sentinel sites” where all sectors engage and where research occurs across disciplinary boundaries, supports multi-stakeholder action in the landscape, and leads to impact;
9. Better understanding of how concepts of innovation platforms apply to multi-functional landscapes, including mechanisms to ensure effective engagement of women and less-powerful social groups in integrated in landscape planning and action;
10. Clarity on how the Theory of Change approach can be applied to multifunctional
landscapes and NRM; articulation of testable hypotheses of landscape process and impacts;
11. Landscape research is informing national and international policy and conventions, including the UNFCCC, CBD, CCD, and the Committee on World Food Security;
12. Strengthened national capacity to partner in landscape research.

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<th>Commitments to collective actions in 2012-2014 (national, regional or international)</th>
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<td><strong>i. With existing resources</strong></td>
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<td>1) Document working examples of partnerships that embrace “landscape” attributes, and provide guidance for the CRP “Sentinel Sites”;</td>
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<td>2) Facilitate research linkages in the Landscapes for People, Food and Nature Initiative “Focal Landscapes;”</td>
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<td>3) Develop collaborative scientific papers exploring key aspects of science for integrated landscapes;</td>
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<td>4) Organize an internal CGIAR dialogue process to clarify the relationship of agriculture, NRM and landscape research in IAR4D;</td>
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<td>5) Incorporate relevant results of Landscapes for People, Food and Nature Initiative Global Review analyses to GCARD Foresight, Partnership and Capacity-Building;</td>
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<td>6) Collaborate among research and development partners to communicate results of landscape research in major policy convenings, such as UNFCCC, CBD, CCD, Committee on World Food Security;</td>
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<td>7) Involve national research teams more systematically in international landscape research programs;</td>
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<td>8) Mobilize results of landscape science to inform the GCARD Foresight modelling and scenarios;</td>
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<td>9) Encourage cross-program Working Groups in research institutions to facilitate landscape perspectives and identify strategic cross-sector research activities within a landscape framework (see IWMI example);</td>
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<td>10) Report to GCARD 2014 on “Lessons Learned and Pathways Forward for Agricultural Landscape Science in International Research.”</td>
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<td><strong>ii. With additional support</strong></td>
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<td>1) Organize an international workshop on “Methodologies for Landscape Science to Support Integrated Landscape Management” involving participants from different landscape research networks;</td>
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<td>2) Organize special issues of scientific journals around priority topics for science for integrated landscape management;</td>
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<td>3) Organize series of workshops/writeshops to identify impact pathways for landscape</td>
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management to support agricultural productivity and implications for research priorities; review the ‘state of play’ and investment in integrated agriculture/ecosystem services/livelihoods in landscapes in the past 15 years)

4) Formally link research programs with established landscape development initiatives, and deepen 2-way communication;

5) Support baseline development in sentinel and focal landscapes across key functions;

6) Support sentinel site and focal landscape collaboration with the knowledge support systems for sustainable landscape management;

7) Support collaborative development of analytical models of integrated landscapes;

8) Assess, design and evaluate policy interventions for more effective integrated landscapes;

9) Develop a guidance document for national and international policymakers to communicate “landscape logic” and implications for policy (Landscapes for People, Food and Nature Policy Working Group);

10) Develop and disseminate a core curriculum for researchers and development practitioners on landscape framework and processes for sustainable development, and implement with collaborating partners as part of research planning and implementation (CGIAR CRPs, AIRCA, LPFN, et al)

### iii. With specific large scale programme investment

1) Ensure full anticipated funding of the landscape-focused CRP’s;

2) Develop multi-sector, multi-institutional research collaborations around core landscape hypotheses, and mobilize research in different types of agricultural landscapes to generate comparative datasets;

3) Develop payments for ecosystem services programs for agricultural land managers in selected landscapes and monitor impacts on ecosystems, agricultural production, livelihoods;

4) In large landscapes with complex land, water, forest and biodiversity resources planning and risk management, support or develop cross-sector innovation platforms for resource management;

5) Scale up existing pilot efforts to whole basin/corridor research and action strategies;

6) Mobilize a consortium of scientists and data managers to develop cutting-edge “knowledge systems for sustainable landscape management” (KSSLM);

   a) Within the sentinel and focal landscapes, conduct systematic assessments of user needs for improved knowledge and negotiation support systems to improve landscape management processes. Focus on existing needs as well as future opportunities, including the ways in which different stakeholder groups understand and incorporate information in decision-making processes.

   b) Work with the KSSLM consortium to develop the requisite technological tools and data management systems to implement the desired knowledge systems. Implement and test these over a period of 2-3 years, with rigorous evaluation metrics.

   c) Synthesize experience on the design and use of KSSLM through publications and iterative guidance for the technical segments of the KSSLM consortium.

7) Provide funding source for more ‘blue-sky’ thinking and research on integrated landscape
management.