

**CGIAR Interim Science Council P & S Exercise:  
Contribution from the International Water Management Institute  
March 28, 2003**

This memo briefly summarizes several of the major challenges and opportunities IWMI has identified related to natural resources management (NRM) research, particularly in relation to water and land resource management. The memo was drafted in response to a request from the CGIAR's interim Science Council. It should be noted at the outset that IWMI is presently involved in a comprehensive review of its research agenda and supporting operations, the results of which will feed into IWMI's 2004-2008 Strategic Plan. The Strategic Planning exercise involves in-depth interviews, workshops, and discussions with IWMI staff, external reviewers, partners, donors, and stakeholders. Once completed, the results of this process will be shared with the CGIAR. In advance of this, however, we have summarized below several research and related research management areas we believe are of significance to IWMI, its partners and stakeholders, and the CGIAR system as a whole.

**Background**

The International Water Management Institute's (IWMI) mission is to improve water and land resources management for food, livelihoods and nature. To carry out its mission, IWMI conducts a worldwide research and capacity-building program to improve water and land resources through better technologies, policies, institutions, and management. Scarce and polluted water supplies have their greatest impact on poor people, especially women and children. Improving the productivity of the natural resource base can make a major contribution to reducing poverty and improving people's livelihoods. IWMI therefore explores ways to help alleviate poverty, protect and conserve the environment, maintain food security, and provide poor and disadvantaged people better access and productive utilization of water and land resources.

**Research Priorities**

- Water is rising rapidly on the international agenda, and IWMI and the CGIAR must effectively utilize this opportunity to not only broaden the awareness of water issues globally but also ensure that we have properly identified and are effectively managing the research areas IWMI together with its partners and stakeholders deem of highest priority. IWMI's Strategic Planning exercise, described above, is designed to do just that. While the results of this exercise are still pending, the following outlines some of the research areas and related research questions we believe are particularly relevance in the countries in which we operate:

Priority Area	Objective	Research Questions
Integrated water management for agriculture	To develop approaches for assessing and improving the performance of water used in agriculture in the context of multiple water uses and competition for water within river basins.	<ul style="list-style-type: none"> <li>• How can the productivity of water be enhanced through water management interventions?</li> <li>• What interventions contribute to improved livelihoods for the poor?</li> <li>• What are the appropriate designs, operational and performance assessment procedures for both small- and large-scale irrigation</li> </ul>

		<p>systems?</p> <ul style="list-style-type: none"> <li>• What irrigation practices lead to real water savings in a river basin?</li> <li>• How do interventions in irrigation influence other important uses of basin-wide resources such as fisheries or domestic uses?</li> </ul>
Sustainable Smallholder Land and Water Management	To identify and evaluate water and land use innovations developed by poor communities and to facilitate the transfer and adaptation of promising smallholder innovations.	<ul style="list-style-type: none"> <li>• What promising smallholder innovations exist to better manage water and land resources?</li> <li>• Under what circumstances do these innovations work?</li> <li>• What are the quantifiable impacts (on agriculture, livelihoods and the environment) of these innovations?</li> <li>• How can these practices be adapted to meet the needs of developing countries and regions elsewhere?</li> </ul>
Sustainable Groundwater Management	To provide a more precise understanding of the socio-ecological value of groundwater and to identify and aggressively promote practical solutions for the sustainable use of groundwater resources in developing countries.	<ul style="list-style-type: none"> <li>• What are the groundwater usage patterns and conditions in developing countries?</li> <li>• What are the opportunities and threats to the use and management of groundwater resources?</li> <li>• What promising management techniques currently exist that could be adapted for use in countries and regions elsewhere?</li> </ul>
Water Resource Institutions and Policies	To identify, test and validate guidelines and ‘best practices’ that can help policymakers better manage their countries’ water resources.	<ul style="list-style-type: none"> <li>• How do governments, communities, and entire societies change their habitual behavior in managing water resources when faced with water scarcity?</li> <li>• What are the linkages between water management, gender and poverty?</li> <li>• What institutional arrangements and policy frameworks have the highest potential to improve the productivity of water for food security, livelihoods, and environmental health?</li> </ul>
Water, Health and Environment	To improve the lives of poor people in agricultural areas by gaining a better understanding of the health and environmental impacts of water use in agriculture and	<ul style="list-style-type: none"> <li>• What water management techniques can be employed to control vector- and water-borne/water-washed diseases?</li> <li>• What are the linkages between</li> </ul>

	to create appropriate tools to safeguard human health and livelihoods and the integrity of the environment.	irrigation water management and water supplies? <ul style="list-style-type: none"> <li>• What are the environmental and health impacts of reusing wastewater for agriculture?</li> <li>• What are the water requirements of various water ecosystems?</li> <li>• What are the values of ecological goods and services and how can they be measured?</li> </ul>
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**Scale of Research**

In the past, IWMI’s research was primarily focused at the farm and system scale. While IWMI still conducts research at finer scales, IWMI understands the need to understand broader basin-wide hydrologic and socio-economic dynamics and to consider the possibilities of scaling up the results of its research findings to the basin scale. IWMI is also working to fill significant research gaps at the global scale through projects aimed, for example, at the delineation of irrigated areas, river basins, and groundwater systems.

**Research Management Considerations**

In addition to the selection of appropriate research priorities and scales of analyses, it is of equal importance to consider the manner in which research is carried out. The remaining sections will thus focus more closely on the methods and operations of research management, the future challenges and opportunities in this regard, and the need to concentrate on developing practical and effective systems to assess the impact of NRM research

**The Changing Face of International Research Centers**

- In the developing world, the growing number of highly trained scientists and major research systems with substantial budgets and staff is effecting a change in the roles of Future Harvest centers. Whereas in the past, the Future Harvest centers were primary responsible for conducting research, there is a growing demand now upon these centers to serve as brokers and facilitators of international research networks.
- This is not the case in every country of the world, however, and Future Harvest centers must learn to effectively adapt to different roles in different regions of the world. In large, high-capacity countries, like India, Brazil, or China, Future Harvest centers might serve most effectively as scientific liaisons bridging scientists and research across political boundaries. In less developed countries, however, Future Harvest centers might focus more closely on building research capacity in national research and extension systems.
- Complementing its research and network facilitating role, there is a growing demand for international research centers to serve as compilers and synthesizers of NRM related research to develop generic management lessons for broader application beyond the specific study sites and basins. The Comprehensive Assessment of Water Management in Agriculture is one example of an important move in this direction.

## **Importance of Partnerships**

- Partnerships are key to successfully carrying out the activities of the Future Harvest centers.
- *Externally* (with scientific community, policy makers, resource managers/implementers and water users):
  - Partnerships are essential to the formation of strong and effective research and knowledge networks and to the exchange and dissemination of information. As such, these external partnerships form critical pathways to achieving impact and ultimately realizing the CGIAR's overall mission of alleviating poverty (see attached document on impact assessment).
  - Effective partnerships require long-term collaboration and cooperation. One mechanism that IWMI is now employing to facilitate this is through the establishment of benchmark basin sites. These basins serve as IWMI's field laboratories in which the institute can not only validate its research and collect data over multiple years, but also develop long-term partnerships with local research institutions, government agencies and NGOs.
- *Internally* (within the CGIAR system)
  - Strong partnerships are also essential within the CGIAR system itself. From a research perspective, each of the Future Harvest centers has its own comparative advantage. Greater knowledge sharing, collaboration, and the development of specialty groups ("communities of practice") among the Future Harvest centers themselves would not only reduce redundant tasks but would also enhance the overall quality and effectiveness of the Future Harvest centers' research activities.
  - Greater collaboration within the CGIAR in such areas as ICT, knowledge management, evaluation and impact assessment, research and project management, and human resources would also greatly benefit the internal operations of the Future Harvest centers.
- The Challenge Programmes and other cross-center initiatives, such as the System-wide Initiative on Malaria and Agriculture, are important catalysts for nurturing stronger collaborative networks both within the CGIAR as well as with other international and national research and implementing organizations.

## **Impact**

- Ultimately the success of the Future Harvest centers is judged by their impact not only on the scientific and policy communities but on the lives and livelihoods of the poor. Effectively measuring and attributing impact, particularly of NRM research, however, remains a significant challenge.
- While a strong commitment to achieving impact is clearly evident within the CGIAR, the challenge is to develop practical, effective, and meaningful systems within all the Future Harvest centers to measure, attribute, and learn from impacts at the project, program, institute, and ultimately CGIAR level.
- The iSC's Standing Panel on Impact Assessment offers an important opportunity to promote greater collaboration among the Future Harvest centers and their partners to develop stronger impact assessment systems.