



# Key challenges for institutions to operationalising INRM – From eco-regional and NARS Perspectives

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**Key challenges for institutions to operationalize INRM:  
From Ecoregional and NARS perspectives**

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This paper highlights practical challenges and lessons arising from our attempts to operationalize the INRM approach over the last 6 years in East and Central Africa (ECA). The examples are drawn from experiences of implementers of the African Highlands Initiative (AHI), an ASARECA ecoregional program operating in ECA, from other CGIAR ecoregional programs<sup>2</sup>, and from two NARI cases – the Ethiopian Agricultural Research Organization (EARO) and the Department of Research and Development (DRD) in Tanzania. We feel that these experiences will provide “food-for-thought” on both technical and institutional aspects relative to the formulation of the sub-Saharan Africa challenge program.

**BACKGROUND**

Since the early 1990’s there has been heightened interest of research to change their operational modes to better address major NRM issues and to balance the emphasis on increasing productivity with ensuring a sustainable environment. Driving forces have been pragmatic:

- Research organizations have been challenged to improve adoption rates, particularly of NRM technologies and innovations, and to show impact, so as to ensure that enhanced productivity does not undermine the long-term productive potential of farms.
- Social, economic and policy issues related to improving NRM need to be addressed (e.g. communal resource management; local organizational and farmer capacity; policies impacting on local resource managers; handling potentially conflicting public-private interests in resource management; relation of NRM to economic growth and risk).
- Some scientific advances have actually caused degradation of agro-biodiversity, contributed to the mining of nutrients, resulted in the emergence of new pests and diseases, and provided only a short-term “fix” to the productivity needs.

These are challenges that responsible research organizations, who promote good science and who have generated many NRM technologies, must address.

**GENESIS OF ECOREGIONAL PROGRAMS (ERPs) AND INVOLVEMENT OF THE NARIs AND SROs**

In 1994, the CGIAR decided to address a number of these short-comings by promoting ecoregional programs (ERPs), as a new mode of working across centres and through partnerships with national and other international research partners. The challenge was to ...“build on CGIAR experience, recognising the need to: integrate resource management and productivity concerns; marry human and technical dimensions; adopt an integrated systems approach; and link policy formulation to technology development” (TAC 1991). Key cornerstones of the ecoregional approach were<sup>3</sup>:

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<sup>2</sup> ISNAR, 2001. Meeting the challenge of ecoregional research, An international workshop on organizing and managing ecoregional programs, Wageningen The Netherlands, 26-28 March 2001.

<sup>3</sup> The ecoregional approach is similar to the current definition of INRM (ref <http://www.inrm.cgiar.org>)

- *to address the sustainable improvement of productivity* through the integration of natural resource management and productivity concerns.
- *to emphasize human decisions as causal factors* that impact biophysical processes such as land degradation.
- *to use multi-level hierarchical approaches* encompassing site-level to wider systems and *recognizing human decisions at different levels*, from farm household to local to national and even global levels
- *to link research with externalities such as policy and development actors* incorporating these elements into the approach

TAC also noted some shortcomings in the CGIAR use of partnerships and clarification of complementary roles in that there was: a lack of a clear global responsibility for strategic research on NRM; limited coordination of capacity building efforts, decentralization and broadening agenda efforts; overburdening of weak and/or smaller national systems by attention from many IARCs; and limited interaction and voice of NARS in CGIAR affairs. The CGIAR has taken various actions to address these concerns in the interim, and the implications for the ERPs operations were:

- *to emphasize the importance of complexity of the task of sustainable improvement of productivity* and the *complementarity of institutional skills* across IARCs, NARIs, Universities, NGO's and farmers organisations as a rationale for increasing partnerships.
- *to remove duplication and overlap across the IARCs* to place less burden on the NARIs
- *to highlight the role of the social sciences* in understanding the social and policy dimensions to sustainable agricultural development and the balance needed between social and biophysical sciences in ecoregional research
- *to pursue working relationships (e.g. multi-disciplinary teams)* that could enhance the examination of a number of resource management themes - such as soil-water relationships, soil fertility and plant protection
- *to use a more holistic, systems approach as well as research for development*

ERPs were launched in 1994 with a twenty-year horizon through 2010 (TAC 1994) to equip the NARIs with the research and institutional models to play that role. (TAC saw the NARI's as the ultimate managers of research on NRM). Thus, the view was that ERPs would implement an INRM research agenda constructed on the basis of broad issues on specific ecological and geopolitical regions, embark on new ways of doing science, and employ new kinds of organizational arrangements. This was a relatively tall order and later it was apparent that ways to change institutions was an important consideration, given that most participating organizations were used to using markedly different approach to doing research.

In the case of AHI, ASARECA took early ownership and the NARIs from Ethiopia, Kenya, Uganda, Tanzania and Madagascar expressed early interest and jointly worked on developing the program since inception. Other ASARECA countries with highlands have also requested inputs into developing INRM programs (DR Congo, Eritrea, Rwanda and Burundi). It was not until 2000 that ASARECA and others involved in AHI realized the important institutional dimensions of this INRM program, and made institutionalization of INRM an explicit part of AHI's agenda.

The INRM approach has evolved the earlier TAC thinking. It is useful for solving certain types of complex real-world problems, taking into account the dimensions of livelihoods, environmental services, agricultural productivity, agroecosystem resilience - social, natural, physical, human, and financial capital. Some new dimensions include:

- *to explicitly involve and build the capacity of resource managers and users recognizing that change and development required specific adaptations under their control*
- *to increase the level of dialogue and deliberation among stakeholders and improve the interaction of research within the system*
- *to deal with high levels of uncertainty, non-linearity, and time lags, involving multiple scales of interaction and response, with multiple stakeholders with contrasting objectives and activities*
- *to incorporate and facilitate social learning processes for various actors and their organizations, including community and research entities*

## LESSONS ON OPERATIONALIZING INRM

### **Finding focus and agenda setting**

A key challenge was to bring together diverse perspectives<sup>4</sup> of “unequal” institutions that had limited experience in setting up an integrated program with a focused, but broadened agenda.

- Evolution and iteration has been required to build consensus of many diverse perspectives and interests<sup>5</sup>.
- A conceptual framework and strategic plan to explain the overall intent of the program must be developed, but flexibility to update and refine these is important.
- Investment of time and process must be made in visioning beyond institutional boundaries and concept development. Facilitation for this is important. Otherwise, the program may be fractured into multiple and de-linked pieces that have limited relationship and where the value from integration cannot be realized. Results and impact will just not add up.
- The “ecoregion” provided a focus – a geographic area with relatively similar socio-political and biophysical contexts where common problems and opportunities arise and hypothesized solutions may make an impact. An ecoregional focus has assisted in making cross-site syntheses, in visualizing the strategic outputs, and provides a common background for sharing purposes.
- Defining the “regional” dimension was difficult and required iterative development, leadership, and good research skills. Initially it was easier and more attractive to do “business as usual” – following local and disciplinary interests.
- Choosing problems and opportunities that were of local, national and international relevance defined from perspectives of food security, sustainable agricultural production, and/or poverty eradication was challenging – e.g. balancing local concerns with higher-level relevance. AHI decided to use bottom up problem identification, amalgamate this regionally to see similarities and differences, rather than using a more top-down ranking of priorities.
- A start up phase where learning can lead to adjustments in orientation and operations was critical in many cases.

### **Organizing the research**

A key challenge has been to engage and satisfy institutional interests while trying to move into new “strategic” research areas where there was limited interest and capacity.

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<sup>4</sup> International, regional, national and local perspectives as well as specific institutional agendas (livestock, commodity, agroforestry, soils, policy etc. that had to be integrated to address the key issues)

<sup>5</sup> AHI found regional planning workshops where there was a high level of cross-institutional sharing, continual involvement over time of the same people, that conceptual growth and practical experience

- There were divergent points of view regarding research site choice: to choose landscape “hot spots” that represented large “recommendation” domains using spatial analysis tools, or to choose sites that had an institutional history and strong interest, and feasible logistics.
- Considerations of scaling up and strategic contributions that sites had to offer came later. Could/should these have been anticipated earlier on?
- Where there is need for progressive development of new research methods over time and where capacity building and institutional change is a key program target – there is need to stay in the “invested” sites so as to build “social capital” (of researchers and community groups) and the capacity of the “change” team.
- Teamwork requires different planning, implementation and reward mechanisms that are not usually institutionalised. EARO and DRD identified the reward and M&E structures as key areas for review.
- Careful organization is required to accommodate various levels and associated stakeholders at the various levels in the research (site, national and regional).
- ASARECA and AHI realized that learning how to manage institutional change and capacity building are necessary components of the AHI program in order to develop and use the INRM approach.
- A strong realization that research needs to be better integrated into development processes so as to inform these processes, where the EARO and DRD cases indicated that institutional linkage arrangements to do so need to be revisited.
- That adopting new expanded roles when in public funded research organizations is not easy because you work in a broader organizational context where the role expectations from others are historical and not easy to change (feedback from researchers).
- Implementers of AHI have been using an output, outcome, and impact orientation in their planning and implementation. Given the challenges of adoption of NRM technologies and arrangements, the outcomes, or finding ways to achieve changes in behaviour, has become forefront in the activities. This has led the NARI research team scientists to have a heightened interest to develop skills in facilitation to influence empowerment.

### **Researcher and organizational capacity development**

Key challenges have been: to develop and practice new methods and approaches where there is limited competence, to face challenges from senior, non-practicing researchers and sceptics who have limited understanding, and to match expectations for quick, high quality results with the time required to develop competence.

- Iterative concept development (necessary for implementing INRM) should link to practical application, e.g. it is grounded in experience. These two important ingredients built and positively changed the AHI research group, and were important in advancing knowledge and the agenda. This needs good leadership and facilitation.
- Capacity limitations in areas beyond technology development have had a major influence on agenda development, and speed and quality of implementation. Institutions are realizing the need for new disciplinary and skill areas; e.g. EARO said it needs sociologists, anthropologists, ecologists, systems agronomists, facilitators, and enterprise development specialists, as well as skills in process monitoring and documentation, participatory research, better analysis and synthesis skills.
- AHI found that regional training workshops were useful but insufficient to develop new skill areas, concepts and to put these into practice. It is now using a “mentoring” system to develop competencies – strong practical field follow-up.

- AHI, EARO and DRD have identified multiple success factors for managing an INRM approach for effective R&D. The joint development and application of an assessment process has shown managers and practitioners that there are some deficit areas in the current implementation of research. This has then led to reform and capacity building plans.
- INRM research quality was assessed by EARO and DRD. The analysis of these two examples showed that better links for learning need to be institutionalised so as to identify and share the “best practices” from project “islands”, and so that managers and researchers share experiences and concerns in dialogue and feedback sessions.
- Assessment of research quality against a vision of desired outcome and impacts proved a useful process to build understanding and usefulness of the dimensions of the INRM approach.
- “Pilot” sites and teams are useful for: building competence in INRM of individuals through practical experience; providing examples of INRM concepts into practice and local impact; and to provide examples to interested institutions.
- Use of action research to gain insight into the “how to” areas for INRM (collective action, group management, innovation systems management, enterprise development chain management) calls for improved skills in facilitation, observation, documentation, and qualitative data management, and combined qualitative and quantitative data analysis.
- Values and principles for operating effective research have assisted those involved in AHI, EARO and DRD to clarify the researchers role, responsibilities and relationship to the clients – making the research process more accountable in human terms and opens the door for dialogue with clients which assumes more equitable control of the research process.

### **Planning for INRM**

Key challenges have been to balance interests, to balance top-down and bottom-up planning, and to move into a process management mode.

- Planning needs to be flexible, iterative and dynamic given INRM program complexity and multiple stakeholder views. A challenge is not only how to reduce transaction costs BUT to see if the benefits outweigh the transaction costs over time.
- Conventional planning using logframe formats is not helpful for INRM research where process, action research (where iterative learning and adjustment must take place) and empirical research that is strategically inserted needs to have flexible and dynamic but output-oriented planning frame.
- It is important to include some “outsiders” to diffuse “agenda seekers”, power relationship problems, and suspected vested interests.
- Planning needs to be cyclical and renewed by incorporating feedback from users and policy changes so that direction can be influenced.
- Weak demand results in weak agendas. Initial investment must be made to develop the capacity of the demand side.
- INRM must have multiple inputs and be programmed in an integrated way to deal with complex issues. However, partners often want to (or have to) remain committed to their mandate and find it difficult to branch out into domains beyond the mandate. Thus, some areas in the plans are more difficult to get accomplished.
- In start up phases, some ERPS placed too much emphasis on characterization at the expense of focusing on strategic problem issues.

### **Integration of disciplines and of strategic–applied R&D**

This has been one of the largest challenges for AHI and where contribution can probably be greatest if we succeed.

- There are still large deficits on tackling the social and policy dimensions of INRM and integrating these with biophysical and economic dimensions at the various levels.
- “Reductionist” treatment of the elements in the system is insufficient to improve field, farm and landscape systems, therefore we need “systems” specialists and new approaches. These are hard to find and operationalize given current orientation of most research institutions.
- Creating an integrated agenda that can be operationalized has been difficult when partners have commodity bias and interests/expertise and where organization of research is along commodity lines. Integration has been easier to achieve in NARI systems that take a regional or zonal approach for organizing staff and resources.
- Integration (and partnerships) needs to be managed, and requires an approach development in itself.
- AHI’s program was positively influenced by major evaluations and stakeholder consultations as these provided significant contributions towards directing it into new avenues, and for negotiating partnership and agenda issues.
- Participatory approaches and action research is often seen by hard-core scientists as non-scientific development work; yet quality science can be brought to bear on these processes. This divide often deters “modelers” from working together with bottom-up, more social processes. A change in mind-set is needed.
- Many organizations have been slow to realize that method, approach and process development are part and parcel of the science process, and make direct contributions to improve development and innovation processes that are needed to overcome adoption bottlenecks.

### **Partnership experiences**

A key challenge was that “partnership” at the onset was a loosely used word and strategies and explicit management for starting, monitoring and maintaining different types of partnerships was not practiced.

- Generally, the ERPs have been very successful in bringing together and managing partners from a much broader range than ever before. Partners are successfully involved in some degree decision-making at various levels of the program.
- NGOs, development partners and private sector were not explicitly invited to the table at first. Now, most ERPs have explicit involvement of these entities.
- Initial engagement by research entities in the ERPs was driven to a large extent by funding expectations, with intention of doing more of the same rather than venturing into the new INRM domain. When it became clear that funds were limited and the agenda was progressive, there were many drop-outs.
- Some organizations sustained their engagement because of strong agenda intersection, as a result of timing in their organizational history, were interested in enduring longer processes that led to institutional engagement, due to good leadership, and trust building. Benefits have to outweigh perceived costs.
- If funds are available to “oil” partnerships – then partnerships lasted through harder funding times because initial intellectual products and working together were compelling.
- Partnership building elements and skills were under-estimated in the beginning. It is a complex process that requires efficient management and time investment to ensure that partners are carefully assessed, mutual benefits are identified, roles and responsibilities are clearly defined, mechanisms for conflict resolution in place.

- Partnership and team management training in AHI greatly assisted in raising awareness that these two areas require input and leadership, and are not just “words on paper”. NARIs, IARCs and ASARECA are now interested in explicitly managing partnerships.
- Tension developed over the relative cost and contributions made from national and international partners. Fund allocation caused stress and competition between the high cost and low cost partners.
- Funding environment continues to promote competition and not integration and partnership, as has leadership styles.

### **Enabling conditions**

This was a key challenge area for the ERPs where lack of clarity and limited investment were major barriers.

- Governance mechanisms need to be clear. The CGIAR did not clearly think this through for the ERPs. There was confusion over conveners role in terms of the degree of ownership, decision making powers and governance role of the convener’s board of trustees.
- A steering committee with well-thought out membership having coordination or facilitation unit has been the most common ERP governance structure. Some steering committees became too large, so the issue is how to get fair representation. To do this, structures have been developed to allow for operation and stakeholder input at different levels (consortia, countries, benchmark sites).
- There was an assumption that everyone came to the table as equal contributors, which is not the case. It is important to recognize the UNEQUAL-NESS of partners.
- ERPs learned that different stages of decision making require different roles, e.g. consultation, decision making on priorities and resources allocated, follow-up by management, M&E.
- Good facilitation, coordination and leadership were KEY ingredients. Broad experience, wide technical expertise, experience in the research and development arenas, and strong vision are required. This was the case at regional, national and site levels of operation.
- As funding went up and down – programs did not shrink and expand readily. Funding levels promised – 39% and got 8% - some felt that this killed the ERPs before they got off the ground.
- No learning culture was set up between the ERPs and within them, until recently for AHI. If this had been a recognized need and invested in, we feel that faster progress would have been made.
- Communicating the mission and impacts of the ERPs has been universally difficult. The publishing record has been generally poor. Analysis revealed that this was due to under-investment and limited planning in this area, very demanding and stretched work schedules of the coordinators, and limited investment in or interest in producing synthesis products.

### **PAY-OFFS: ADVANCES IN INSTITUTIONAL AND TECHNICAL DIMENSIONS**

Some of the pay-offs towards using the INRM approach and organizational model are multiple:

- There are many successful cases where science and farmer knowledge have been successfully linked and resulted in new technologies and management practices, particularly in soil fertility management.

- The concept of “linked technologies” – where multiple options were experimented with by farmer interest groups led improvements in soil conservation, fertility management and food and income for various social strata
- Exploration of traditional knowledge and means of managing NRM is uncovering collective action pathways that can be supported in future.
- Improved partnership arrangements and coordination has emerged around solving major problems identified by farmer communities.
- By working directly with communities, researchers have gained personal insights on poverty dimensions and limited adoption of improved technologies – leading them to change their research methods and hypotheses.
- By working in a multi-disciplinary team that includes development agents researchers coming from single-disciplinary perspective have realized the limits of their discipline, that combined expertise and technologies go farther in solving systems problems, and have been exposed to development perspectives which are taken into their research agenda.
- Farmer assessment, knowledge and feedback on technologies have positively influenced the technology development process.
- Examples where action research is contributing to development processes, improved analytical skills of farmers, and catalysed dialogue between actors involved in the development process.
- There is realization by a number of research managers and researchers for the need for cultural and organizational change and processes that enable this to happen need to be understood so they can be managed..
- Process research and knowledge management structures are under design and development.

Challenges aside, the emerging so-called “organization model for INRM” described above, conforms to a number of principles of an “adhocracy” – which is an organizational type that has potential for flexibility and learning. It is characterized by production of complex outputs that demand sophisticated innovation by combinations of experts deployed in teams, where coordination is achieved less by direct supervision, performance controls and rules than by selective decentralization. The power to make decisions is decentralized in uneven ways and devolves to a person or level that is most likely to have the expertise needed to deal with the issue at hand. It allows for patterns of working together that emerge in a self-organizing way, management creates a climate where a variety of strategies can grow. (Ashby 2001). A learning organization as defined by Senge (1990) mentions: a willingness to take risks and experiment, decentralized decision making, systems for sharing learning and putting into practice, frequent use of cross-functional work teams, opportunities to learn from experience on a daily basis, a culture of feedback and disclosure, and collective vision building. This may be a model worth considering for research organizations and partnerships in the future.

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