Towards Participatory watershed Action Plan for INRM in the East African Highlands: AHI Experiences in Lushoto Tanzania

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Abstract

The need for a watershed approach in addressing constraints faced by rural communities arises from the realization that solution to some issues requires higher-level organization involving more than one farmer or community. In this paper we share our experience in formulating a participatory watershed action plan with farmers in Lushoto District northeastern Tanzania. An in-depth exploration of biophysical issues confronting farming communities in 6 villages (collectively referred to as Baga Watershed) in Lushoto District identified issues that can be addressed at farm level and those that require collective action involving different communities scattered over a larger area. The delimitation of such an area is difficult since it will be dictated by not only biophysical characteristics (hydrological) but also by t€he extent of social interactions of the communities in relation to the biophysical issues at hand that make different neighbouring communities feel that they need to come together to address them effectively. Constraints that can be addressed at farm level include poor soil fertility, lack of improved seed and lack of breeding bulls. On the contrary, issues like pest and disease management, soil conservation, management of water sources, presence of undesirable boundary trees and management of traditional canals require a higher social organization involving several communities as can reasonably be determined by the issues themselves.

After identifying with farmers at village level issues requiring watershed level intervention, participatory watershed action plan was carried out where representatives from the six villages attended. Representative teachers from the local schools, and researchers, extension officers and the resident community development officer joined the farmers in this exercise. The watershed action plan set out a program for addressing the issues earlier prioritized by the different villages indicating what should be done when and by whom, as well as the kind of facilitation required. Farmers were enthusiastic with the exercise especially on the prospects for collective action involving the wider community in the watershed as they realized that their collective strength could be positively exploited to address issues that individual communities could not.

Background

Most of the upland ecosystems have been referred to as watershed or catchment areas that have been sources of water for the entire upland and lowland ecosystems including both human societies as well as fauna and flora within and along the ecosystems. Different scholars have defined watershed in hydrological point of view as a land where all of the water that is under it or drains of it goes into the same place or an area of land draws down slope to the lowest point (EPA, 2002). As for this paper watershed is referred to as an area which is dictated by not only biophysical characteristics (hydrological) but also by the extent of social interactions of the communities in relation to the biophysical issues at hand that make different neighboring communities feel that they need to come together to address them effectively.

Multiple practices have been initiated in order to achieve the integrated natural resource management in the watersheds. In many areas, participatory watershed planning has been carried out and the success stories have been reported. According to Fernandez (1997), participatory watershed planning is a matter of guiding and organizing in such a way that the population of the watershed unit may come together and with help from facilitators identify problems and needs and work for the benefits that can be recognized in measurable terms by families, individuals and groups living in the watershed or within its area of influence.

In order therefore to arrive to an accurate identification of peoples' priority issues in the area, the contribution of the innovative ideas, the incorporation of people's own traditions and lore, development in self confidence as the project proceeds, a jealous control over resource use, self support over the medium and long terms; a strengthening of peoples own forms of organization and the bringing into being of a virtuous circle of improvement, the participatory element must be genuine one, with no personal preferences shown on any manipulation of the community (Klisbergy,1997 in Fernandez, 1997). Basing on the situation that has been reported to exist in the Usambara highlands especially in Baga watershed, local communities with the facilitation of African Highland Initiative (AHI) facilitators embarked on an exercise of developing a watershed action plan by applying participatory approaches involving different stakeholders. The main task of this activity was to develop an achievable watershed action plan using participatory approaches that will enhance effective management of natural resources in the Baga watershed in highlands of Lushoto Tanzania where AHI operates. Specifically the exercise aimed at identifying the burning issues that when implemented can promote effective management of natural resources in the respective highlands, characterizing the issues according to the priority on the need to the watershed villages in the highlands; setting deadlines of different activities that have been proposed to be carried out in the watershed and proposing the follow up mechanism for Participatory Monitoring and Evaluation (PME) of the whole action plan that has been prepared using participatory approaches.

Methodology

To develop an action plan for the watershed, information was gathered from the community through the use of a number of participatory approaches and tools. Key informers, leaders and individual interview, focused group discussions with different categories (gender, location on landscape, and resource endowment), were employed to identify major watershed problems. Focus group meetings also facilitated the ranking of the issues identified during PRAs, prioritization of the issues according to the need.

Plate 2: Group heads of watershed forum presenting they findings and to other members of the forum

A watershed forum was then called to formulate the action plan for the issues that need to be solved (Plate 1 and 2). The forum identified different groups and individuals that will be responsible for making follow ups of the planned activities setting deadlines for the specific activities to be worked out and setting participatory monitoring and evaluation of the plan that has been prepared. Five (5) representatives from each of the 6 watershed villages attended the planning meeting. Among the five, there were two men and two women, and the fifth was a teacher who represented his/her school, which is one of the village stakeholders other stakeholders were also involved during the process. Generally the approach for the meeting could be either conducting a meeting in each village or having representatives from each village and meet at one venue. Representatives opted for the second option and researchers, and staff from extension services and non-governmental organizations facilitated the process.

Results

The issues for planning in the Baga watershed were in four major areas. These include; water resource related issues, trans-boundary issues (tree/crop/water interactions), land productivity that included crop and livestock related issues as well as social issues. For each major area bottlenecks were discussed and their solutions and alternatives suggested. To ensure success in implementation of the plan participants proposed; formation of committees that will be involved in implementation of different issues, development of implementation program, implementation modality, responsible person/group and time frame to deal with the issues that require a higher social organization involving several communities at the village and at the watershed level. Specific issues, their solutions and alternatives of the four main areas (water resources, land productivity, trans-boundary and social are discussed below.

WATER ISSUES

Water source issues are presented in detail in Monsoor etal, in this volume.

Crop production

Community mentioned decline soil productivity as a result of soil erosion and declined soil fertility as main causes of declined crop productivity in the watershed. Several solutions were proposed which include conservation of soil against soil erosion, use of organic and inorganic fertilizers to fertilize the soil.
Unavailability and high prices of quality seeds for crops grown was another culprit for low yields of crops observed in the watershed. Participants explained that in the villages within the watershed, there are no more existing good varieties of seeds simply because the seeds that were brought have been attacked by diseases and they do no longer exist. Participants referred seeds of crops like beans to have been affected completely.

The proposed solutions for this problem was to provide new seed varieties which have been tested for their resistance to diseases and drought, farmers should form seed production groups and buy the seeds in small quantity in order to try them in the area. Participants also mentioned the need for AHI and farmers to share the costs for purchasing of the required seeds for testing and multiplication. Prioritization of the seeds required in the watershed was also conducted where by seeds that are resistant to diseases/drought and that will also have short maturity period to include potatoes, tomatoes, maize, cabbage and some perennial crops like coffee and banana were recommended to be availed to farmer seed production groups in the area for testing and multiplication.

Livestock production

During the discussion the major issue regarding livestock production that has been discussed here was the establishment of the breeding bull (Dairy) centers. Participants mentioned lack of bull centers in the villages within the watershed as one of the burning issues. They agreed to establish a dairy bull center in each village for all six villages, which are within the watershed. Meeting representatives from different villages were required to introduce the idea to their own villages and they have to select bull keepers among themselves at

village level. The representatives agreed to have established bull fodder plot near bull keepers home and the arrangement for bull box (shed) construction in each village should be made prior to the purchasing of the bulls. Moreover, they should have to lay-down the running procedures for a bull center, cost for maintenance and hence financial contribution and fund raising from the centers and users. The agreement was that farmers with the assistance of AHI should see the feasibility of cost sharing for bulls purchasing from improved herds.

Trans-boundary issues

Different issues were raised and were considered as trans-boundary issues that need a higher level of organization within the villages and the watershed at large. The issues that were hoisted included Plantation of undesirable boundary trees, diseases and pests, soil erosion and farm boundaries. Regarding undesirable tree species, *Eucalyptus* spp planted at the boundary to protect government natural forests, Sakarani estate and woodlots owned by the absentees land owners were mentioned to have affected villager's neighboring farms and water sources. Furthermore, other trees including Miwati (*Accacia meansii*) and indigenous avocado tree spp were also mentioned to have the same effects. For the case of diseases and pests, it was mentioned that, diseases, pests and insects affect peasants whose farms border the forest. Similarly farms that are not properly managed cause the spreading of the diseases insects and pests to the properly managed farms. According to community, farms seriously affected by soil erosion are those that are not planted with trees, grasses or without terraces. These farms were identified as cause of sedimentation to other farms, which are located on the lower slopes. Uncontrolled fires affect soil and forests in the watershed. Example given by the community was fire started at Mponde village that had affected neighboring Kwadoe village. It was also pointed out by the community, that charcoal burning contributes to soil erosion, such that fire that is used in charcoal burning can also burn farms as what happened at Kwadoe and Mtunda, the areas that are out of the watershed where the fire from these villages burnt the tea farms/plantations. Road construction/maintenance was identified by community to be one of the main causes of soil erosion in the farmer's fields.

A number of solutions on tree species affecting water and crop productivity were identified, these included; conducting stakeholders meeting to discuss the issues pertaining to the undesirable trees (i.e. Sakarani and ward leaders), planting alternative trees, collaborate with stakeholders who planted tress (i.e. Eucalyptus) to uproot them, planting of exotic (e.g. avocado) trees. Others were provision of the bylaws that will put emphasis on uprooting trees mentioned to have affected the soil and water, which will also need people to plant alternative tree species and the need of consultations with experts.

SOCIAL ISSUES

Through facilitation the community was able to identify the social capital existing in the watershed. These were three, problem solving mechanism, local experts and by-laws. Problem solving mechanisms included elder's council, religious leaders, ten cell leaders, and village ward and division leaders. The local experts are those who know different tree species, practice traditional medicine, traditional birth attendants and fortunetellers. Last but not least for social capital is existence of by-laws towards protection of natural resources.

Participants from watershed villages mentioned necessary conditions for effective collective action and these included collaboration/cooperation, holding meetings and formulation of work program, developing working calendar, existence of bylaws, trust, closeness, willingness to work together, creativity, and good leadership. The community identified a number of areas where collective action is needed and this are bylaw formulations on free grazing, tree harvesting, forest and wild fires, sell of immature crops and on management and conservation of forest and water resources. Other areas where collective action is needed are in construction of irrigation canals, soil conservation, and trees on farm boundaries and livestock issues especially on the bull issue.

It was pointed out by the community that adherence to bylaws is weak therefore it was recommended by the community to urgently review the current bylaws and examine their suitability, and applicability and assess on

whether if additions are needed and obstacles towards implementation of the current bylaws. Hence the community has proposed AHI to facilitate the committees in the villages to work on bylaws, educate local communities on the importance of bylaws. The community had also proposed seeking advice from elders on how implementation of the bylaws can be carried out and on the need of ward council to advocate the importance of people to participate in work.

Conclusions

Involvement of users in watershed management has significant implications for watershed research, principally that improving the sustainability of watershed management will require not only better technologies and policies for resource use, but also better organizational mechanisms and processes through which stakeholders can come together to make decisions. In many ways, watershed management is about 'managing the invisible' in the sense that, up to a certain point at least, the outcomes of changes in natural resource management practices are incremental and often not immediately observable. Sustaining participatory watershed management when the outcomes of people's efforts are not visible is hard. Thus, an important contribution of research to participatory watershed management is, as expressed by Woodhill et al. (1999) 'to make the invisible visible'. Establishing collective research or learning capacity in local communities may be particularly important to achieving sustainable participatory watershed management because of the importance of local institutions and collective action in the watershed environment. The research or learning process can be a way to unite diverse stakeholders around common interests and goals. Most of the activities planned in the participatory watershed action plan of Baga watershed in Lushoto are firmly linked with research so as to ensure awareness creation and identification of appropriate technical solutions.

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Chapter 7:

Managing New Working Relationships

Challenges and Opportunities in Leading a Multidisciplinary Team of Professionals from Multiple Institutions: Lessons from AHI Lushoto

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Abstract

Forging strategic partnership to address the complex natural resource management issues in the highlands of Eastern Africa is one of the cornerstones of the AHI approaches in mitigating natural resources degradation. Such partnership brings together professionals from different institutions with different training, interest and experience. Apart from the highly specialized nature of the professionals, they are also charged with different tasks as dictated by the mandates of their institutions. The management of such teams brings about organizational challenges that require effective leadership in order to exploit the capacities existing in our institutions. In a study involving African Highland Initiative (AHI) site coordinators from Ethiopia, Kenya and Tanzania leading multi-disciplinary teams of professionals from different institutions it was established that this is a challenging task requiring patience, commitment and vision. As the team sets to work there is an overall lack of enthusiasm and an element of fear for the unknown. Several questions are raised in the areas of motivation, rewarding system for a group product and loss of professional identity in their areas of specialization. With time however, these fears subside for those who persist and leadership becomes more interesting and less challenging. It is concluded that there is a need for cultural change in our institutions as well as the professionals to accommodate the increasing needs for teamwork in addressing the complex natural resource management issues for improved systems productivity in the highlands of East Africa.

Introduction

There is a growing consensus on the need to experiment with new ways of working with local communities in efforts to improve the management of natural resources for environmental sustainability and improvement of the livelihoods of the people. Multidisciplinary teamwork where different professionals from different institutions come together to address common issues is one of these new ways of working that has been adopted by AHI. This was necessitated by the reality that NRM issues confronting highland farmers in Eastern Africa require broad based solutions that goes beyond biophysical technologies to social, economic, policy and institutional factors. There is no single discipline or institution that is equipped enough to handle this. The need to team up between different disciplines and institutions poses a significant challenge to leadership. Having a multi-disciplinary team is one thing but working together to effectively address a common issue is quite another. Putting people together in groups representing many disciplines does not necessarily guarantee development of shared understanding (Clark, 1993). Mitchley (2004) echoes this by pointing out that multidisciplinary team approach does not necessarily include integration.

To exploit synergies and provide holistic outcomes therefore, multidisciplinary teams must adopt an interdisciplinary working model that ensures different disciplines and institutions do not only come together but also work together to attain the required cross-fertilization. Drivers for successful multi-disciplinary teamwork include personal commitment, clarity of roles and having in place a common goal and a group of people with vision to take the others through (Wilson et al. 1996; Pirrie et al. 1998) and mutual understanding between professionals.

The presence of an efficient leadership that minimize the barriers to working together by facilitating exchange, mutual understanding and acceptance among team members (Mitchley, 2004) is therefore of paramount

importance. The emphasis in teamwork is on working together to deliver an integrated service to end users (Wilson and Pirrie 1999) and leadership must see to it that this is achieved.

Among the challenges a multi-disciplinary team leader should expect is to have to cope with team members who are reluctant to learn or accept other members' disciplines, tendency of scientists to pursue questions that are of interest in their own disciplines (Bawa and Lele, 2004), logistics (Pirrie et al. 1998), attitude of team members and limited institutional support to some of the team members. Teams exist within an institutional framework and the degree to which different professionals enjoy support from their institutions differ considerably (Pirrie et al. 1998). Some institutions vaguely support multi-disciplinarity while in others, team members are not sure of the support from their institution. Other institutional bottlenecks include the lack of an incentive scheme that recognizes and reward team product. Multi-disciplinary teamwork takes time but eventually yields good results as long as the rules of the game are honestly adhered to. Team members must be fully involved from planning to implementation and in sharing the products of the work.

In this paper the experience of coordinators in leading multidisciplinary teams of professionals from different institutions was studied in three sites in Ethiopia, Kenya and Tanzania. Information was collected through individual and informal interviews of site and former national co-ordinators. The objectives were to document the challenges in leading multi-disciplinary team of professionals and to identify opportunities that can be exploited to ensure effective team leadership. The study is justified by the fact that we lack information on and experience in leading multi-disciplinary teams from different institutions. Information from this work will contribute to the perfection of better strategies for the management of multi-disciplinary teams from different institutions for improved performance.

Methodology

Formal and informal individual interviews of site and national coordinators from Ethiopia, Kenya and Tanzania were conducted through e-mail communication and face-to-face talks. Two (2) sites in Ginchi and Areka in Ethiopia, 1 site in Kenya (Kakamega) and 1 site in Tanzania (Lushoto) were covered in this survey. Respondents were requested to critically look into and narrate challenges they faced during their terms as leaders of multi-disciplinary team of professionals from different institutions. The position of national coordinator was abolished in the current (Third) phase of AHI (2002 – 2004). The coordinators interviewed included those currently holding their positions and those who have left for other duties, studies or on account of positions becoming redundant. They were also requested to indicate the major lessons learned and give recommendations for improved team leadership. Information collected was synthesized and results summarized.

Results

In all the sites studied the imbalance in skills and experience among team members was cited as one of the major challenges to leadership. Coordinators faced the challenges of bringing team members to the some level of understanding of project approaches. Most scientists were new to the approach and they could not see how quality data within their disciplines can be obtained from a multi-disciplinary research work. In Ethiopia for example, researchers preferred to keep to their disciplinary identity first and integration with other disciplines later. In extreme cases some researchers never believed in multi-disciplinary research at the beginning and pulled out of the team (Tanzania) to stick to the conventional ways of doing research. Few in this category who remained in the team were not flexible enough to accommodate ideas and experiences from their colleagues although later, this changed. Coupled with this, was the lack of respect to other disciplines and researchers adhering to research quality at the expense of overlooking farmers' indigenous knowledge and experience. These differences among the researches were a big challenge to coordination. As noted above, there have been changes in various attributes with time as shown in Figure 1 for the Lushoto site. From the figure, interpersonal antagonism between team members and antagonism between AHI activities and other activities has decreased as team members and institutions understand and accept albeit gradually, the positive contribution of AHI.

Meanwhile, experience in skills of team members, acceptance of multidisciplinary (MD) team work, leadership competence and internalization of the AHI approach has increased although the later at a slow pace.

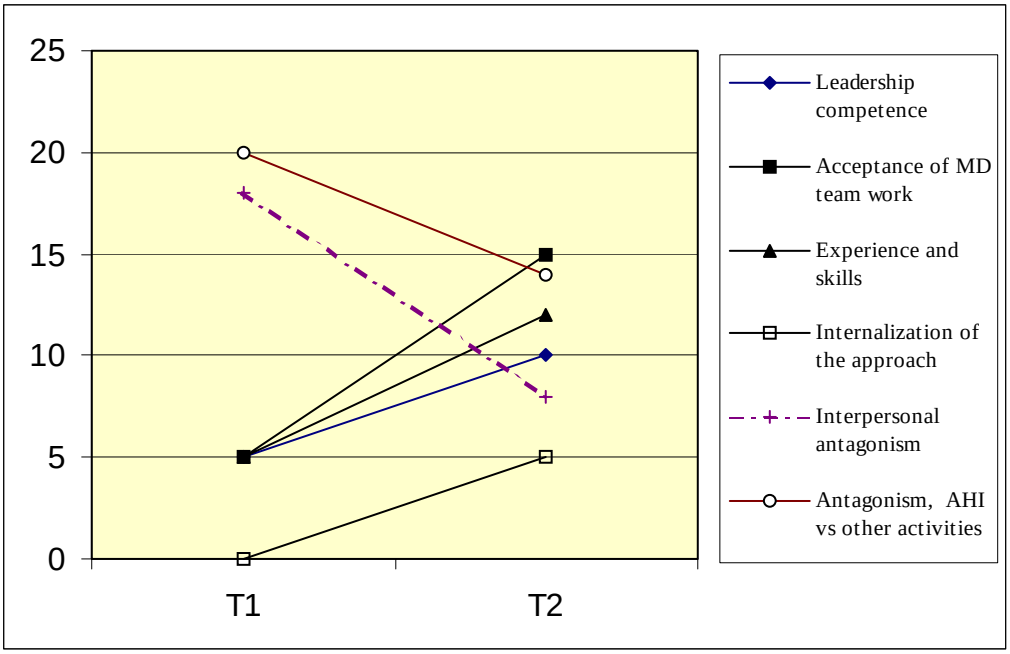

Figure 1. Changes in various attributes with time at the Lushoto site, Tanzania.

Common in all sites was the imbalance of the disciplines with more dominance of biophysical sciences compared to social sciences. The former have limited understanding of social science research methods. This affected the teams especially in conceptualizing Phase III of AHI, which is more on methodologies and approaches at watershed level than technology development. Emphasis is more on social sciences including community mobilization, policy, bylaws and institutional factors for enhancing INRM. In Kenya and Ethiopia the absence of memorandum of understanding is cause in leadership hurdles because of lack of clear-cut roles and responsibilities of participating institutions and researches. Some heads of institutions are not clear on the project objectives and activities and these are not even incorporated in their annual institutional plans. This makes it difficult for sites to get contribution form some experts in some institutions. There is lack of terms of reference for participating researchers making them less committed to AHI activities. Their institutional heads does not critically follow them up and they are they not even evaluated based on their contribution to project.

Consequently, some team members have not internalized the AHI activities as an integral part of their programs. Because AHI activities are considered secondary this had led to poor participation in project activities in some sites and slow pace of integration of the approach into the national R&D programs. It was noted also that the reward system based on individual (disciplinary) rather than team performance does not recognize the product of teamwork hence discouraging researchers. Coordinators have then to cope with demoralizing situations among team members. Most sites noted that the majority of team members are scientists with several other responsibilities in their institutions, others coordinating multiple projects. Apart form making it difficult for them to commit sufficient time to AHI activities it is also difficult for the coordinators to plan joint team engagements in the sites.

The differences in aspirations and attitude were pointed out in three of the sites studied as another challenge to coordination. The high turn over of team members, some going for further studies and others for other jobs disrupts project activities and calls for concerted efforts by coordinators and partner institutions to scout for replacement. In almost all sites studied replacement is a slow process. Different age groups have different aspirations; young scientists vying for further long-term studies (not accommodated by AHI) and the older and more experienced vying for increased remunerations hence better jobs. The coordinators have to cope with these challenges in trying to keep team members together despite of their differences. In most sites, participating scientists have higher expectations in terms of economic and educational gains which cannot he

met within the structure of the project leading to some members wishing not to participate or do so with divided commitment.

There is an overall failure to balance project goals with personal gains with some members comparing gains across projects and hence would favor to put more time in more rewarding projects. Finally, the universal reality of limited resources is another stress to coordinators especially when team members have to come from distant institutions (e.g. Tanzania). In some sites the lack of basic equipment including cameras has greatly affected the capture of important incidences for process documentation. Another problem is the late arrival of funds to sites partly caused by late submission of work plans or financial bureaucracies in the different countries. This leads to delays in implementing planned activities, disrupts plans of other activities and influence teamwork morale.

Discussion

Leadership is always a challenging task. Often, one is confronted with scarce resources in terms of manpower, funds and materials, which have to be used optimally to realize set goals. Naturally individuals in any organization are seldom homogenous and would differ in attitude, the way they receive things and react to situations, and in their aspirations. They also have different qualities they acquired in the struggle to acquire a career. This would be in knowledge, experience and skills. The extent of challenge to leadership will inevitable be influenced by the groups' heterogeneity. Good and effective leadership of multi-disciplinary teams can be considered a function of two factors namely the style of leadership and the attitude and commitment of team members to work together for a common goal. The extent to which coordinators are transparent and involve all team members in the whole process from planning to implementation of projects and in sharing the products of their work will greatly determine the groups' performance. In some sites, coordinators tend to concentrate most activities and decisions to their offices plus some few individuals around them while in other sites there is shared responsibility. The former has high potential to disrupt operations should the coordinator leave while in the later case any of the team members is prepared to take over powers should the position fall vacant. Further, there is less workload when the approach of shared responsibility is adopted and coordinators would not feel overloaded. Transparency is now a catchword in many organizations as one of the factors for improved performance. This allows team members to know what is taking place and contributes to making things work better, because they feel involved. Further to this, leadership must ensure that the roles and responsibilities of each team member are clear to and there should be frequent communication to keep members informed (Wilson, et al. 1996).

From the results AHI activities are yet to be fully considered as an integral part of the NARS to augment their efforts in delivering appropriate NRM options to farmers. The fact that some scientists and research managers consider AHI activities as non-core or secondary activities shows that internalization has not taken place. Experience from elsewhere (Pirrie, 1998) show that this problem is not unique to AHI. The problem could be due to lack of or limited sensitization of team members and research managers on the role AHI was designated to accomplish. Although at the onset NARIs agreed on collaboration there was no formal mechanism to ensure project activities would be part and parcel of the NARIs research programs and that the AHI approach would be internalized. This was a serious blow to efforts towards institutionalization of the AHI approach.

There is therefore a need to do more homework in sensitization of researchers and research managers on this. An important issue to be tackled would be to formalize through memorandum of understanding, the collaboration between the partners and establishing terms of reference for participating scientists so that each one knows their roles. Further, the rigid motivational system within most NARIs should be re-visited to allow some flexibility in rewarding a joint research product.

Heads of participating institutions should, in collaboration with the site coordinators, closely follow up the performance of their staff so that project activities are considered important in their career. Most NARIs motivates researchers using publications as one criteria and this workshop has given researchers a forum where they can share and discuss the products of their work, which is one of the motivations. However, publication based motivation is still dominated by single discipline products. To accommodate the new approaches to

NRM that is, teamwork involving different disciplines there is a need for concomitant changes in the reward system (Mitchley, 2004). As pointed out by Bawa and Lele (2004) there should be a social and cultural transformation of research enterprise through teaching and education and provision of incentives for people to do things differently.

Imbalance in knowledge and skills especially the significant shortage of social scientists should be addressed. Efforts towards imparting social science skills to biophysical researchers is a step in the night direction as this is an important factor in interdisciplinary work; to get know some aspects of the others disciplines and to be able to appreciate and develop respect far other peoples disciplines. Further, training of a new generation of researchers for multi-disciplinary teamwork should now impart skills on working in a team composed of different disciplines (Ramakrishnan, 2004).

Although there seem to be a lot of challenges to leadership, there is an emerging trend in most of the issues raised, of a future that will see less antagonism among team members and between AHI and NARI activities (Fig 1) and hence minimize burden to the leadership. In Figure 1 aspects like competence of leaders, experience and skills are increasing. The pace of internalization is slow while antagonism between AHI and NARI activities is decreasing.

Conclusion

It is concluded that leading a multi-disciplinary team of professionals from different institutions is a challenging task. However, this is more of a problem at the beginning. As team members get to know each other better and accept and appreciate each other's professional background the work becomes more satisfying, antagonism decreases and leadership becomes more interesting. Through teamwork one get to know more professionals and is exposed to more talents hence broadening their horizons and thus make one more competent in addressing the intricate issues in NRM. This also means an expansion in scope and opportunities in their careers. Emerging trend in some aspects such as experience and skills and teamwork spirit is encouraging. Internalization of the AHI approach is lagging behind leading to researchers and research managers to consider AHI activities as non-core or secondary to their normal activities. We therefore recommend the following:

- More sensitization of researchers and research managers using successful examples from the sites, on the role and importance of AHI in managing natural resources in highland ecosystems.
- Establish memorandum of understanding between partners and terms of reference for researchers.
- Articulate for recognition and reward of team product to motivate researchers in multi-disciplinary teams.
- Build and strengthen leadership capacities in the sites. Sites should opt for more transparent and joint leadership and devolution of power to lessen burden on coordinators while ensuring smooth succession.
- Establishing clear institutional arrangements to ensure internalization of the AHI approach. There should be strategic forums for sharing the successful cases in AHI. There should be increased advocacy and sensitization of the AHI approach to potential stakeholders and other institutions.

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Operationalizing R&D Linkages: A Framework for the Integration of Diverse Learning Approaches

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Abstract

Operationalizing research and development (R&D) within a fluid continuum encompassing both understanding and application can be a daunting task. For research to make significant contributions to development, it is important that action research methods be taken on board. This enables research to address process-related questions about how to achieve real outcomes, such as, "What works, where and why?" This type of question can in turn only be answered by achieving actual development outcomes on the ground, requiring effective facilitation. Yet action research should not be considered as a substitute for more formalized, empirical forms of research. Empirical research in diverse disciplines represents a means of generating development inputs (i.e. technology, policy) and achieving a more objective assessment of the situation so as to formulate well-informed interventions. It can therefore be productively utilized as an input to both development and action research. This paper presents a typology of distinct learning approaches designed to operationalize the R&D continuum. It summarizes lessons for achieving quality within each approach, and for their integration into a fluid R&D continuum. A set of cases is presented to illustrate the critical importance of each learning approach and their integration in practice. The paper concludes with a discussion of implications for institutional arrangements and partnerships that may best enable the application of the approach within everyday R&D practice.

Introduction

Despite many decades of development-oriented research, global challenges to economic development and social justice are today as great as ever. While knowledge generation is but one contributing factor to development outcomes, researchers are being held increasingly accountable to concrete outcomes by both donors and end users (Meinzen-Dick et al., 2003). This is because while research in some fields has yielded significant advances for human health and welfare, in others its impacts have been limited despite considerable investment (Hammersley, 2004; Meinzen-Dick et al., 2003). The limited impact of research can be traced in large part to the institutional disconnect between research and research methods on the one hand, and development practice on the other (Agbamu, 2000). As stated by Hammersley:

"There are times when we initiate inquiry without having been stimulated by a practical problem. Moreover, science and philosophy have become institutionalized; in other words, they are specialized occupational activities that are carried out outside the immediate context of other activities – and they therefore generate their own intellectual problems. Even where they are oriented towards providing knowledge relevant to some practical issue, they do not usually form an immediate part of courses of action directed towards dealing with that issue … Recognizing intrinsic relevance as a stimulus to inquiry points to the possibility of a much looser relationship between research and other kinds of activity" (2004:170).

In addition to the institutionalized separation of research and practice, one sees greater status awarded to theory over praxis within Greek and Western philosophy. The institutionalization of research as a specialized form of inquiry and the negative backlash to action research within the scientific community are both evidence that this distinction is alive today (Hammersley, 2004). The challenges faced in operationalizing research-for-development are therefore embedded in a much larger historical and institutional context which shapes the nature of institutions, scientific inquiry, and the definition of roles and responsibilities in knowledge creation.
Action research is increasingly seen as a promising approach for improving the impact of research on development (Hagmann and Chuma, 2000; Reason and Bradbury, 2001). This is envisioned in multiple ways, ranging from the new definition of research objectives and methods to the reformulation of roles (from outsider

observer to participant, individual to collective). Yet action research has yet to take hold in terms of its perceived validity, funding levels, and the degree to which it has been institutionalized as part of standard R&D practice. Understanding about action research objectives and methods remain continue to remain unclear among R&D practitioners. These trends are in large part due to this deeply entrenched historical disconnect between research and practice, which has institutionalized the lack of concern and skills for bridging the divide within *both* research and development circles. Yet confusion also stems from the fundamental tension between theory and practice, which requires the subordination of one relative to the other in the short-term when making funding decisions and defining priority objectives and actions (Hammersley, 2004). This article tries to validate the role of action research in development, not as a substitute for more conventional or empirical forms of research but as a complementary learning approach. It then attempts to operationalize how theory and practice, as well as diverse forms of research, might be operationalized within a more fluid and effective R&D continuum.

Background

EMPIRICISM

The notion that the ability to perform good research is lost if research becomes involved in practical action has prevailed into the current era, as evidenced in the institutionalization of research and the prevalence of empirical research methods. On one hand, empiricism represents a reaction to religious forms of reason from the Middle Ages, in its emphasis on experience as the origin of all knowledge. While this represents a closer union between theory and reality, strong reliance on the scientific method as the means to deduce knowledge through experimental validation of empirical propositions[1] has kept empirical research largely in the hands of specialists ("researchers") and separate from the domain of practice. This is true for both the biophysical and social sciences, in which the formulation of new understandings through systematic observation by specialists remained unquestioned until only recently.

Action Research

Different from empirical research, action research implies an "intimate, two-way relationship between research and some form of practical or political activity-such that the focus of inquiry arises out of, and its results feed back into, the activity concerned" (Hammersley, 2004:176). As defined by Lewin (1946) and Dick (2002), action research is a flexible spiral process which allows action (change, improvement) and research (understanding, knowledge) to be achieved at the same time. It is particularly suited to deal with "operational research challenges" due to its closer linkages to practice (Hammersley, 2004) and the participation of research in social processes and social capital generation (Gustavsen, 2003).

Action research differs from empirical research in several fundamental respects. First, the objectives of action research are defined differently, in terms of addressing practical or political problems. Given such objectives, research questions often target processes or approaches (*What works under condition X?).* Secondly, methods used are different. Rather than fixing a methodology up front based on a theoretical proposition and pre-determined information gap, action research proceeds with a 'best-bet' approach which is reflected upon and modified as experience is gained through action. These approaches may be defined at the level of the beneficiaries themselves or at the level of outside change agents (for example, approaches to community facilitation). While research methods in empirical research are often 'pre-tested', modification of methods once data collection initiates runs contrary to scientific principles. Finally, the role of the detached observer is no longer required, as the researcher can either become engaged in the change process or remain an outsider observer.

There are also diverse forms that action research itself can take, depending on the theoretical stance, methods used, the definition of roles, whether it is an individual or collective process, and whether it contributes to

[1] Empirical propositions affirm relationships between two or more type of objectives implicitly defined in locally independent categories, and must be potentially refutable on non-logical grounds (Pierce, 1956).

specific (immediate) or wider problems (Hammersley, 2004). In the way it is defined in this paper, it involves social learning at both beneficiary (community, organization) and program levels, in which diverse actors jointly contribute toward solving practical problems. However, a distinction is made between action learning and action research depending on the degree to which learning is synthesized and codified. While diverse social actors (local and external) jointly engage in change processes (problem definition, strategy development, monitoring), research in the sense of formal analysis and documentation may remain more specialized. Furthermore, an important distinction is made between action research designed to address specific (localized) problems, in which local actors or beneficiaries own the learning process and formalized data collection is minimal, and that designed to answer more strategic or general research questions – in which the process of inquiry is often specialized and data collection more formalized.

When placing research in the context of development, research assumes an instrumentalist orientation that requires the learning process to serve practical or political goals directly to be of value (Hammersley, 2004). This is not to say that there is no intrinsic relevance to research or that "pure" research has no value, but that research-for-development implies contributions to concrete development outcomes. While interactive or participatory methodologies may aid in capturing such knowledge, more *EXTRACTIVE or EMPIRICAL* research methods are often required to gather quality data due to the level of sophistication of methods or the need to control for the influence of overly outspoken individuals (i.e. through systematic sampling procedures in social research).

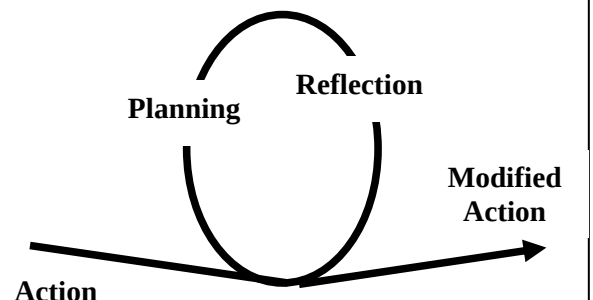
A TYPOLOGY OF LEARNING APPROACHES FOR R&D

The aforementioned typology of research-for-development can be roughly translated into three distinct learning approaches for development, as well as the particular objectives, methods and skill base that can help to achieve quality within each.

Participatory Action Learning: Facilitating Change Processes

Participatory action learning (PAL) is an actor-based approach that educates and empowers through implementation and frequent re-evaluation of 'best bet' approaches so that their continuous refinement can better lead to desired outcomes. It may be carried out within R&D institutions as a process of institutional change, or by local communities as they seek solutions to common problems. The approach is composed of iterative cycles of institutional or community-level action and reflection (Box 1) that empowers by placing the nexus of development strategizing in the hands of the beneficiaries themselves. Its aim is to bring about change within the communities or institutions where it is carried out. The learning process does not lend itself to formalized methods in which a development or change strategy is identified up front and implemented in a linear fashion, because approaches tend to be ill-defined at the outset and require learning through action. Such an approach is best suited to social, institutional or political change processes that require learning through action and enable actors to confront context-specific situations that hinder desired change as they emerge.

BOX 1: Participatory Action Learning



(Hagmann, personal communication)

Increasingly, PAL approaches are utilized within social learning contexts, where multiple actors collectively construct meanings (problem definition, objectives) and work collectively toward solutions (Maarleveld and Dangbégnon, 1999; Pretty and Buck, 2002). Methods for ensuring quality in PAL include simple planning and monitoring frameworks, effective facilitation and an inclusive change process that effectively integrates broad-based concerns and perspectives. Simple planning and monitoring frameworks may be of many different kinds. One used recently within AHI is broken down into 3 basic steps, which are implemented following problem definition: planning (to be carried out prior to any local development action), reflection (to be conducted periodically to monitor progress and enable corrective action), and re-planning (to ensure that observations are converted into actions) (Table 1). Effective facilitation requires an experienced facilitator knowledgeable of community dynamics and clear about the subject and objective(s) of the change process, and who has a talent for devolving control and decision-making to others while providing useful tools for organizing group decision-making and action.

Table 1. Guide for Participatory Planning and Monitoring of Change Processes

1. **Planning**
- Objectives (What does the community or organization want to achieve?)
- Approach (How are they going to go about it?)
- Plan for Participatory Monitoring and Evaluation (What is going to be observed as the process is implemented?)

2. **Reflection**
- Successes (What went well?)
- Challenges (What did not go well?)
- Findings (What did we learn as we went?)

3. **Re-Planning**
- Recommendations for the Way Forward (Given the above observations, what should be changed in the approach to better accomplish stated objectives?)changed in the approach to better accomplish stated objectives?)

The development and open negotiation of performance indicators can be a means of integrating broad-based concerns into the process by ensuring that specific indicators receive attention during each consecutive step. Without such open negotiation of indicators, certain values and perspectives may become lost in overly general reflections that lend themselves to co-optation by more outspoken individuals.

ACTION RESEARCH: UNDERSTANDING CHANGE PROCESSES

The term action research (AR) is used here to refer to research on PAL (development and change) processes. The research dimension aids in documentation and systematization of lessons as target activities are implemented, monitored and adjusted through time. By systematizing observations on change processes, it provides answers to the questions, "What works, where and why?" This not only aids in actor-based learning at local or institutional levels, but also allows for impact to be scaled up beyond the immediate field site through the sharing of experiences with other development actors. As it is superimposed in time on action learning, the two are generally considered a single approach – "participatory action research" (PAR). As stated above, action research is an iterative process which integrates action (change, improvement) with research (understanding, knowledge) (Lewin, 1946; Dick, 2002). The differentiation of the two approaches is useful for several reasons. First, while individuals may be skilled in both areas, the skill base needed for effective facilitation in PAL is distinct from that required for effective systematization of experiences (AR). In the former, a personal commitment to social change, effective communication and group management, and social awareness of group dynamics are valuable skills. In action research, while the former skills are also valuable as they enable observations on power dynamics and development process, research skills (appreciation of – and methods for – documentation, validation, and synthesis) are also crucial. Secondly, the immediate goals of the two differ. While in the former the primary aim is action (i.e. enabling localized social or institutional change), in the latter the most immediate aim is research (systemization of experiences for subsequent sharing). Herein lies the fundamental contradiction highlighted by Hammersley (2004). Yet rather than resolve this

contradiction through the subordination of either action (PAL) or research on action (AR), here the attempt is to differentiate among them and see how they can be logically and operationally linked.

Action research has been employed to enable change in the classroom (Elliott, 1991; Stenhouse, 1975), industry (Coghlan et al., 2004), agricultural extension services (Hagmann, 1999; Percy, 1999), on farm (Hagmann and Chuma, 2002), in environmental management (Gardner and Sinclair, 2003), urban communities (Kelly et al., 2004) and public health (Basu, 1996; May et al., 2003). It enables a second level of observation, separate from the immediate beneficiaries of PAL, of the change process itself. This enables consideration of whether the approach is effective in enabling achievement of broader program goals that may or may not emerge from the community or beneficiaries themselves (i.e. equity, sustainability). So in addition to being a means of systematization of experiences, it can be seen as a second level of PAL at program level or among external change agents. In the best case scenario, research questions (*How to we best do X?*) and best-bet approaches are defined up front yet continuously refined as learning-through-action takes place. This can represent a challenge for regional research programs. While *approaches* should be flexible and iterative, defining higher-order strategic *questions* at regional level is necessary to enable ongoing reflection on a common question and regional synthesis of findings. Examples from AHI include: a) "How can effective "integration" and "participation" in watershed management be achieved?", and b) "What conditions are needed to enable individuals to make greater investments in common (as opposed to individual) goods (i.e. widespread benefits from development, improved management of common property resources)?".

Operationalizing action research requires consideration of both roles and methods. In action research, action research can be carried out by the facilitators themselves or can involve an independent researcher. While some practitioners prefer the latter (Hagmann, personal communication), within AHI action research is being conducted by program-level facilitators. Within AHI, a simple framework similar to that utilized in PAL has been employed for action research ($). Inherent in this framework is the level at which observations are carried out (facilitator or program level).

EMPIRICAL RESEARCH: INPUTS TO DEVELOPMENT

While some would argue that action research is the only useful form of research for enabling change, it is argued here that empirical research in many cases has a crucial role to play. While the latter is generally considered to be more tailored to academic than applied goals due to its overly rigid methodology (fixed questions and methods) and extractive (as opposed to interactive) forms of knowledge generation, there are several instances where empirical research has an important role to play in social change. First, it can assist in filling critical information gaps hindering development by shedding light on more illusive dimensions of perceived problems and solutions that defy easy observation by local residents or other program beneficiaries.

In such cases, research questions can often be targeted by the beneficiaries themselves. Other cases may require that research be targeted by outsiders so as to inculcate certain values (equity, sustainability) in the development process. One example involves stakeholder negotiation in natural resource management, in which local knowledge about cause and effect may be highly contested due to divergent 'stakes' of different actors. If effective scenarios for improved cooperation in natural resource management are to be developed, empirical data may be needed to more objectively determine the effect of different management practices on established goals (i.e. the effect of different land uses on water resource degradation), and to de-politicize the negotiation process. A second example involves empirical research in social science, in which rigorous social 'sampling' may be required to counter-balance the tendency for more outspoken actors to dominate community fora and to more objectively determine the concerns and priorities of different local actors. These examples are illustrated in more detail in the case studies which follow.

BOX 2. Action Research Guide for Program-Level Action Learning and Process Documentation

I. PRIOR TO ANY ACTIVITY / STEP:

Objective: What is the program trying to achieve?

Approach: What will be done to achieve the objective, and how?
(What steps will be taken? Why did you choose these steps? Who will you involve, and why?)

Plan for M&E: What is going to be observed and documented as you go?

II. FOLLOWING ANY ACTIVITY / STEP:

Approach: What did you actually do to achieve the objective?
(Did you modify your approach? If so, how and why?)

Successes: What went well?
(What worked? What do we need to do to find out?)

Challenges: What did not go well?
(What were the stumbling blocks? Why did they occur?)

Findings: What were farmers' (beneficiaries') suggestions on the way forward?
What you're your own observations about the process?

Lessons: What lessons or insights can be derived from these experiences?
(Strengths and weaknesses of the approach, from what you have observed in practice.)

III. PRIOR TO ANY FURTHER ACTIVITIES / STEPS:

Recommendations: What would you do the same and differently next time?

Yet the tendency in empirical research is for the research imperative derived from the scientific community's standards for success (peer-reviewed publications, scientific questions driven by theory to determine which questions to ask. If empirical research is to play a role in social change within particular contexts, the aims of research must clearly target development outcomes. This brings in the question of critical information gaps and uncertainties, namely defining which information or empirical research outputs are crucial to enable change, and which is marginal. Equally important is to ask ourselves who should define these. In some cases, researchers or project personnel may define the research questions according to key information gaps which will enable them to better target interventions or to understand program impacts. In other cases, local actors will define critical information gaps according to their priorities or the need to resolve contradictory understandings at the local level. In other cases, local residents can identify key problems and solution parameters while researchers work alone to develop the technology (for example, crop breeding). Depending on the minimum level of technical knowledge required to derive reliable information, local residents can often be involved as researchers although following scientific standards of quality control.

Articulating Linkages among Diverse Learning Approaches

At this point, it is important to consider how these three learning approaches can be effectively articulated toward achievement of stated development objectives. Figure 1 illustrates how the diverse learning approaches are linked in practice. The iterative series of loops signifies the development or PAL process. We enter the loop once we engage the community or organization in planning, action and reflection. In PAL, communities or organizations engage in a series of learning events composed of planning, action, reflection and re-planning components. Each of these learning events should provide important inputs to the next learning event (altering the course of action), which is itself an indication that reflection is leading to real change. Action research is embedded in the PAL process, and also represented by the series of loops. Observations made by facilitators or independent action researchers help to guide the facilitation process itself, and therefore do not exist in isolation from the participatory action learning process. Empirical research, on the other hand, may serve to inform the approach from the outset based on what is known from the literature and practice, and may be inserted into the PAL process throughout to fill critical information gaps. Empirical research objectives must adhere to the overall development objectives, but specific questions may emerge from the community or

beneficiaries themselves, or from the facilitators as they identify critical information gaps that through action research that could improve development interventions.

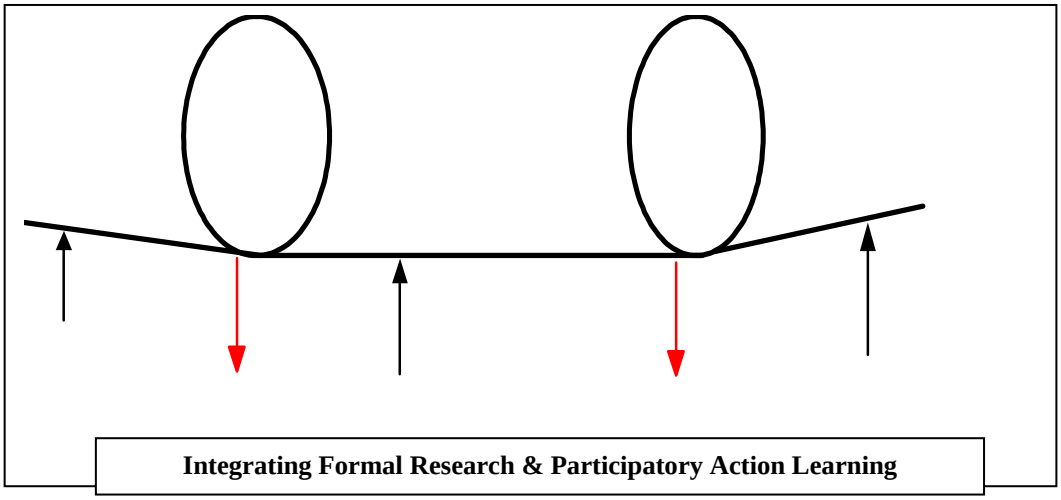


Figure 1. Embedding Empirical and Action Research in Participatory Action Learning Processes

BOX 3. Protocol Format for Integrated Research and Development

1. Background and Justification
    a. Overall Objective (from integrated research and development interventions)
    b. Background leading to this intervention and why it is important
    c. Justification: brief overview of related research and practice, what is known, possible solutions and knowledge gaps
    d. Overview of expected results (outputs and outcomes) associated for different beneficiaries/audiences

2. Description of Research and Community Action Processes
    a. Overview of the work:
        i. Main STEP in the process for improving watershed management and the major objective associated with this step
        ii. Sub-Steps related to the step with associated objectives and main areas of community action and associated research (A and/or B)

Then for each SUB-STEP:
    b. Describe the community action processes and associated research (PAR)
        i. Describe the specific research questions and objectives
        ii. Describe the community action process
            Activities, methodology, results expected
        iii. Describe action research process (repeat for each research question)
            1. Research question, Activities , Methodology (including data collection, analysis),
            2. Results expected: outputs targeted to whom and outcomes
    c. Describe formal research
        i. Research question (repeat for each research question)

Objectives, activities, methodology (data collection, management and analysis), integration of work into community action process, results expected: outputs targeted to whom and outcomes

3. Implementation and management plan

Implementation plan, management plan, roles and responsibilities of investigators and collaborators, monitoring plan with indicators, dissemination and reporting plan

For planning purposes, activities targeted under each learning approach must be integrated. The overall objectives toward which all research and development interventions are targeted must be clearly stated from the outset. At this point, a protocol for integrated research and development interventions similar to that in Box 3 can be utilized as an integrated planning tool (Stroud and German, 2003).

Table 2. Planning Framework for Integrating Diverse Learning Approaches in Research and Development

Major Activity / Stepa	Objective	Development Intervention (PAL)	ACTION RESEARCH QUESTIONS	EMPIRICAL RESEARCH QUESTIONS
Watershed Diagnosis	To identify major watershed problems from the perspective of local residents.	*Primary Research Question:* How can watershed problems affecting local residents be effectively diagnosed?		
		1. Focus group discussions by gender, age, wealth and landscape position to identify key watershed problems, and opportunities and barriers to their resolution. 2. Program-level planning. 3. Participatory watershed action plans.	1. What is an effective approach for planning at local & program level? 2. How can problem diagnosis be balanced with the need for immediate impact, so as to keep community interest high?	1. What are watershed priorities by gender, age, wealth & landscape position? 2. What are key opportunities and barriers to addressing identified problems in the watershed?
Soil & Water Conservation and Management	To enhance the positive synergies between water, soil and tree management in micro-catchments.	*Primary Research Question*: How can NRM practices (SWC structures, tree planting, drainage systems, etc.) enhance agricultural productivity through decreased erosion while also enhancing spring recharge long-term?		
		1. Spring development with spring management plans (responsibilities, rules, sanctions). 2. SWC structures and niche-compatible afforestation to control erosion, enhance water recharge & minimize income loss (from soil, seed & fertilizer loss). 3. Social organization, negotiation & local policy reform for integrated catchment management.	1. If a high-priority entry point (spring development) is used, will outcomes of future R&D investments be greater? 2. What are the necessary conditions for people to invest in a shared resource? 3. What are effective approaches for reaching the overall cluster objective(s)?	1. What is the impact of chosen SWC measures on run-off, soil & nutrient loss, & infiltration? 2. What are farmers key indicators for SWC, and how do these change over time? 3. Which trees are compatible with different niches? How do prioritized tree species perform in different niches?
Integrated Production & Nutrient Management	To improve farmer incomes and system productivity (crops, livestock, trees) while enabling sustainable nutrient management.	*Primary Research Question*: How can income be improved through increased agricultural productivity (crop, livestock, tree and nutrient management) and marketing while also enhancing system nutrient stocks?		
		1. Scale out tested crop varieties with integrated nutrient management, training, and group organization for sustaining farmer-to-farmer spillover. 2. Introduction of improved feed and livestock husbandry practices. 3. Quantify total fuel needs to minimize use of dung for fuel (system nutrient decline), and identify viable solutions (fuel-efficient stoves, afforestation).	1. What is an effective and sustainable approach for scaling out tested varieties & integrated nutrient management technologies? 2. What are effective approaches for improving livestock & feed production, minimizing system nutrient loss, and meeting fuel needs without system nutrient depletion?	1. How can soil fertility be maintained while increasing farmer income through increased production & value addition (seed potato)? 2. Which varietal & integrated nutrient mngt. practices perform best in Galessa watershed?

An example planning framework with some of the above entries (Table 2) illustrates the value of integrating diverse learning approaches. While a single research question and objective help to focus all learning approaches toward a single goal (thereby keeping them integrated), articulating the role of different learning approaches enables positive synergies between social learning at community (beneficiary) level, action learning and research at program level, and the resolution of critical information gaps.

Case Studies

CASE STUDY: PARTICIPATORY WATERSHED MANAGEMENT

Participatory Action Learning

Enabling improved natural resource management at landscape or watershed scale presents several challenges. First, the interests of diverse groups and interactions among them must be acknowledged and managed so that interventions do not favor some groups at the expense of others. Second, gains to diverse landscape-level components (trees, crops, livestock, water, soil) must also be managed given that strong trade-offs often exist. While participation is essential to manage such a complex agenda, it also must be managed so that different groups have a voice in the choices and outcomes. Thus, the key role of effective facilitation in balancing diverse and often contradictory agendas, and action learning approaches to foster adaptive management of biophysical innovations as well as social change.

Throughout the eastern African highlands, several problems related to agroforestry were identified during watershed exploration. In all sites, certain tree species cause water to dry up when cultivated near springs, and compete with crops when located on farm boundaries. In Galessa (Ginchi benchmark site), limited land cover resulting from extensive deforestation and limited agroforestry has led to an extreme shortage of fuel wood, exacerbating soil fertility decline through the use of cow dung for fuel. So a key challenge in the region, and particularly in Galessa, is to integrate more trees into the system without further exacerbating tree-related problems. A standard approach to afforestation is to elicit farmers' demands (tree species and numbers) and to establish a single nursery with the desired number of trees, or to simply promote the species that are available by development agencies. The problem with these approaches is that they fail to consider the trade-offs of different tree species, or to consider the niches where different species are compatible.

In AHI's watershed management work, we are developing new approaches to stakeholder negotiation (German et al., 2004a; Tesema and German, 2004). Action learning is required in two respects. First, rather than take an individual approach to integrating trees on farm, we are looking at species compatibility *by niche* so that afforestation activities alleviate constraints (fuel, timber, income, fodder) while minimizing negative impacts on water, crops and soil. The problem lies in negotiating restricted land use rights on private property for particular niches (farm boundaries, watering points). A case from Galessa watershed illustrates the role of action learning, in which working approaches are not known until tested (Box 4).

If this approach had not worked, new approaches would be generated through identification of the weaknesses in the first approach (during PM&E) and then tested. This case study illustrates a broader approach currently being tested in AHI sites, in which stakeholders specific to each niche (Table 3) are brought together to negotiate more optimal outcomes.

Table 3. Niche-Specific Stakeholders in Agroforestry, Lushoto District, Tanzania

Niche	Stakeholders
1. Farm boundaries	- Owners of boundary trees, neighboring farmers, missions, churches
2. Forest buffer zone	- Farmers in buffer zone, Ministry of Natural Resources and Tourism
3. Watering points	- Individual landowners, water users
4. Within farmland	- Individual household members (by gender, age)

BOX 4. Case Study: Removal of Eucalyptus from Springs in Galessa Watershed

For several years, farmers from Ameya village (Galessa Watershed) had tried to convince the landowner of the only year-round spring to remove his Eucalyptus from the area because they had observed significant declines in spring discharge following woodlot establishment. The owner consistently refused, and the villagers were threatening to take him to government courts to resolve the case. The conflict was in a state of escalation when the watershed program initiated. fter some debate with the Watershed Committee on the best approach to follow, it was decided to first attempt to resolve the case informally through the involvement of village elders. The elders were encouraged to talk to the landowner on an individual basis prior to open negotiations, which became a decisive factor in the landowner attending the scheduled village meeting as it helped to minimize feelings of antagonism. After brief introductions to the problem by PA, Watershed Committee and AHI representatives, each party present at the meeting was asked to present their view on the situation. When the Eucalyptus owner expressed his views on what he would lose in labor and money if he were to cut down the woodlot, other farmers began to attack him openly. The facilitator intervened to legitimize the landowner's position and right to speak. The ultimate consequences of a dried up spring on current and future generations brought the landowner to offer a concession to remove the Eucalyptus in exchange for one tree planted elsewhere on his property by each household. Initially, the proposal was rejected, yet after one farmer agreed to plant a tree, all others followed. All parties, including the landowner, left the meeting in high spirits.

A second way in which action learning is required in agroforestry activities is in adaptive management of tree nurseries. Learning to manage technical dimensions of tree nurseries is only one component of effective nursery management. It is also important to consider how group organization will influence outcomes. In Galessa watershed, technical recommendations from project personnel were initially determining the number of nurseries in the watershed. Yet through dialogue with local residents, it was determined that two nurseries were needed to enable effective management due to the distance of one of the watershed villages to the nursery site (making follow-up more difficult for them), and the availability of a viable spring in this village. An action learning approach will also be employed in the development and testing of rules and regulations for nursery management, including responsibilities (who must water, and when), benefits (who gets access to which trees) and sanctions (what is the consequence if people do not meet their responsibilities). In this way, conflict and misunderstanding is minimizes from the outset. Yet whether or not these rules work in practice can only be known through vigilant monitoring of group management over the life of the nursery, and timely resolution of problems encountered along the way. In this respect, participatory monitoring and evaluation plays a crucial role in the success – both technical and organizational – of afforestation activities.

Action Research

Action research at project level also has a crucial role to play in the aforementioned activities. First, it enables the planning of quality ("best bet") intervention approaches. Without effective process planning (i.e. the objectives and approach of afforestation interventions) (Box 5), interventions designed to facilitate stakeholder negotiations or effective group management in afforestation would be less likely to succeed. Furthermore, the need for stakeholder negotiations and collective action may not even become apparent in the absence of interdisciplinary planning and dialogue, and the process may resort to the status quo of individualized decision-making and action. This, in turn, would risk further exacerbating identified watershed problems (water supply, competition between trees and crops). Second, monitoring and evaluation of the approach is required at project (and in AHI's case, site team) level. This enables adaptive management of interventions, so that problems that would escape local-level identification (i.e. the lack of equity, the pitfalls of individual decision-making, or poor technical management of nurseries) may be fixed in a timely manner. Finally, process research and documentation is required so that lessons on how to manage an effective watershed management process may be distilled and disseminated to others who could benefit from such approaches. See Box 6 for an example of lessons distilled from PAL processes on spring management.

BOX 5. Process Planning at Site Team Level, Ginchi Benchmark Site

I. Objective:
To optimize gains to diverse system components and users from afforestation activities through the development of rules for niche-compatible afforestation.

II. Approach:

- Remind participants of watershed findings related to niche incompatibility (drying of water, negative impact of trees on crops and soil).
- Discuss experiences from other sites, where widespread afforestation has caused as many problems as it has solved because tree planted was done without considering tree properties.
- Open discussion: Do we need to be smart about what trees we put where? Why or why not?
- Feedback findings of tree niche study (see *Empirical Research*, below): a) niches identified, b) niche compatibility criteria, c) trees fitting and not fitting compatibility criteria.
- Group work: break into 5 groups by niche to discuss: a) whether rules are needed to regulate planting of niche-incompatible species or to balance the needs of diverse users, b) whether rules regulate existing trees or only those planted in the future, and c) how to ensure rules are followed.
- Return to plenary to present findings on how many trees were demanded by individuals in the watershed. Discuss implications of unregulated afforestation activities (nearly 4,000 "incompatible" trees requested). Is it important to revise these demands? Where should economically-important but niche-incompatible (harmful) species be planted?

BOX 6. Principles Distilled from Conflict Resolution in Spring Management

- The case study in Box 1 illustrates some general principles that can be employed in other cases where stakeholder negotiation is required to address natural resource management problems, namely:
- The crucial role of a third party both knowledgeable of and respected by each stakeholder (in this case, village elders) to aid in minimizing the problem in the minds of each party prior to face-to-face dialogue.
- The facilitator does not need to maintain a neutral stance toward outcomes, but must openly legitimize all stakes to seek a middle ground.
- The importance of compromise (each party making some concessions for the benefit of the other).
- If successful, community (informal) conflict resolution and negotiation is more effective in resolving long-standing disputes than legal enforcement mechanisms.

Empirical Research

Empirical research also has a crucial role to play in watershed management. In AHI benchmark sites, it has either been used or is envisioned for problem identification, as inputs to stakeholder negotiations (generating objective understanding of cause-and-effect), and for monitoring impacts. For the first of these, we opted for formal research rather than a participatory rural appraisal (PRA) in the identification of watershed problems. The reason for this is that we wished to systematically capture diverse opinions on key problems, and understand how diverse groups prioritize these problems. During a PRA, findings are generated by "consensus" at community or focus group level, where more outspoken individuals can more easily dominate problem identification and prioritization. Individual or focus group problem identification, coupled with individual ranking, enables a socially-nuanced understanding of how different social groups prioritize watershed problems. Our findings demonstrate how issues reflecting female domains of activity such as domestic water supply receive a much higher rating by women than by men, while issues affecting male rights

(i.e. rights to land and irrigation water) and responsibilities (road maintenance) are prioritized more highly by men. Similarly, wealth influences how issues requiring significant resource inputs (labor, capital) are ranked, while landscape position influences access to drinking and irrigation water and the corresponding ranks for these issues (German et al, 2004c).

Empirical research is also required as an input to stakeholder negotiation. In the case of niche-compatible afforestation activities, empirical research in social science was utilized to identify local knowledge on key niches, niche compatibility criteria by niche, and a list of species both compatible and incompatible with each niche. While such activities could have been conducted in a participatory action learning mode, it would be more difficult to work with key informants more knowledgeable about the properties of indigenous and exotic tree species. It would also have required protracted meetings with many participants, taxing people's patience in the process. Empirical research in biophysical science is also envisioned to clarify some of the doubts about biophysical cause-and-effect. For example, if certain tree species interact negatively with neighboring crops, at what distance do these effects become significant.

Similarly with water resources, how important is tree location (i.e. distance to watering points or location with respect to underground flows) in the effect exhibited by different species on water resources? Such information can play a crucial role in stakeholder negotiations, because it give a concrete reference upon which to negotiate optimal outcomes. Furthermore, it helps to de-politicize negotiations on sensitive issues, for which different versions of "local knowledge" could be leveraged in support of particular outcomes beneficial to the bearer of that knowledge. In general terms, objective knowledge on sensitivity of particular system goals (maximizing water discharge or crop yield) to change in key parameters – whether obtained through rigorous social or biophysical research – represents an important input to watershed management.

Discussion

While the above cases and planning tools illustrate how the integration of diverse learning approaches can be attained, significant challenges remain to making such an approach part of standard R&D practice. First, all actors must reach a common vision about the ultimate end to which each learning approach (action learning, action research, formal inquiry) is put, about the important role played by each, and about the process through which specific sub-objectives are defined (namely, community-based action learning). The scientific community continues to value theoretical over applied research, despite the fact that theory and practice have much to gain from one other. This will hinder attempts to reach common objectives, or to ground research questions in development process. Furthermore, there tends to be a mutual under-appreciation among researchers and practitioners with respect to the critical importance of each other's methods and skill base to development (Bebbington and Farrington, 1992; Turton and Farrington, 1998). The second major challenge is the development of effective institutional arrangements to link the diverse learning approaches and their required skill base. Currently, the most empowering action learning processes are found within development organizations, classrooms and other domains of "practice", skills for formal research in diverse disciplines are concentrated in research organizations, and quality action research has yet to be institutionalized in most parts of the world. Clearly, a new skill base would need to be integrated into existing institutions and new institutional linkages forged between research and development organizations in order to institutionalize such an approach. An immediate solution to this problem would be funding of strategic research in which the strengths and weaknesses of different institutional affiliations, linkages mechanisms and training programs would be systematically tested and documented. An approach such as this one might begin with a more detailed look into the roles and responsibilities of different actors (empirical and action researchers, PAL facilitators), the skill base required to operationalize these roles, and where these resources reside within existing institutions. Knowing where existing institutions fall in their disciplinary mix and mandate (research, development), it is possible to identify critical gaps and build partnerships based on complementarities. At this point, an action research-action learning approach could be utilized to test what is required to enable effective inter-disciplinary and inter-institutional cooperation within diverse institutional models. Research questions could be designed to fill critical information gaps around such partnerships, namely, "How can joint accountability to a unifying objective, and to concrete development outcomes, be established?", "Which institutional arrangements are most effective in unifying diverse learning approaches?", and "What is required

(training, incentive systems, field experience) to generate a common appreciation of the respective strengths of diverse learning approaches?" Clearly, action-based learning is required across 'learning cases' to approximate effective answers to such questions on learning approach integration.

Conclusion

In contrast with the general tendency to either value or discredit the more marginalized learning approaches (action learning, action research), this paper highlights the critical role played by each in a fully operational R&D continuum. While participatory action and social learning approaches are known to generate the most successful results with respect to fully empowering development processes, empirical research has an upper hand in filling critical information gaps that defy local knowledge or more 'participatory' forms of research. Finally, action research has a crucial role to play in synthesizing action-related findings ("*What works, where and why?*") for a broader audience – thereby multiplying the impacts of location-specific development interventions, and in understanding how empirical research results can best inform development practice. A number of useful didactic and methodological tools are presented to justify the importance of diverse learning approaches and their articulation and to enable their application by the research and development community. Yet questions remain on which institutional arrangements would be best suited to enable more widespread application of such an approach. The paper is written in an attempt to encourage other R&D actors to reflect upon the relevance of the model within their own practice, and to contribute to a broader debate on how to best put it into practice.

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Institutionalization of the AHI's Inter-disciplinary and Multi-institutional Approach into the DRM System in Tanzania

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Abstract

Due to complexity of farmers' environment in the African highlands, AHI's research approach emphasizes an inter-disciplinary and multi-institutional participatory research, which seeks the active involvement of various stakeholders knowledgeable in other fields. AHI's main objective is improvement of the livelihoods and household incomes of inhabitants of the highlands while retaining the long term productivity of the land. On the other hand, the Department of Research and Development (DRD) having their own perspective, has also been challenging. So, how does one achieve a bottom-up process that has strategic links across the region? How does one negotiate these levels to gain appreciation between levels and actors? Various operational mechanisms are discussed and evaluated. To have effective performance and implementation of the various linked agendas, one has to foster and manage 'unequal' members and diverse teams at site, national and regional levels to enhance positive interactions and to ensure clearly articulated complementary roles and responsibilities. Propelling and dispelling factors, difficulties and achievements for effective, functioning to integrated, multidisciplinary team work are summarized and lessons learned presented. Various types of partnerships between research organizations are elucidated and progress lessons are reviewed. Analysis of partnership issues is made against a 'partnership assessment framework' that was developed for monitoring and evaluating these relationships. Different partnership configurations that link research to development have emerged and have varying strengths and weaknesses

Introduction

The complexity of farmers' environment, in many parts of the highlands of the tropics, makes it difficult for scientists (of one discipline from one institution) to come up with appropriate new technologies or recommendations. This complexity results from both bio-physical and social-economic factors (eg variation in bio-diversity and soil variability, wealth status etc). Conventional agricultural research tends to lead to general recommendations, identified in a process during which the complexity is reduced by limiting the number of researchable factors and by disentangling the research into separate disciplinary fields (URT, 1991). Adoption rates of technologies developed through this process are often disappointingly low (AHI, 2001; Mowo et al. 2002).

AHI uses a multi-disciplinary team approach in which partners with different disciplines from different institutions work together with farmers in the R & D process, developing a basket of technological options for different farmer categories specifically focusing on the complex NRM in the humid highlands of East and Central Africa (AHI, 2001). On the other hand, the Department of Research and Development(DRD) of the Ministry of Agriculture and Food Security (MAFS) implements different research projects many of which use different participatory research approaches. So far there is no common framework to assess or monitor these approaches for institutional harmonization.

This paper looks at the multi-disciplinary and multi-institutional participatory research approach adopted by AHI and compares it with approaches followed by research projects under DRD. The specific objectives of this study are (1) to analyse the potential and limitations of participatory research methods/approaches being used by AHI and different research projects in institutes run by DRD and (2) look for possibilities to integrate these approaches for effective technology generation and dissemination in Tanzania.

Methodology

The following methods were used to solicit opinions of different stakeholders in the process of carrying out participatory research and development.

- Discussion with AHI Lushoto team about how they operated
- Discussion with DRD staff on how research teams plan research and development
- Discussion with groups of farmers on the appropriateness of the approaches (AHI vs DRD)
- Discussion with researchers on the appropriateness of the approaches (AHI vs DRD)
- Case studies of joint analysis of participatory research methods being used (AHI vs DRD)

Discussion with AHI Lushoto team about how they operated

Lead questions/themes in discussing with the AHI Lushoto team were as follows:

- How they organized participatory research in addressing NRM issues
- What lessons the team has learned

Discussion with DRD staff on how research was planned

Lead questions/themes in discussing with DRD staff were as follows:

- How they organized participatory research in addressing NRM issues
- What problems did the team experience

Discussion with farmers on the appropriateness of the approaches (AHI vs DRD)

Lead questions/themes in discussing with farmers were as follows:

- Whether involving them in identifying problems and working together with researchers to solve their problems was of any help
- Whether they were able to identify researchers of different disciplines or from different institutions during researcher visits (not clear)
- Whether they found working together with researchers and other stakeholders was of any help

Discussion with researchers on the appropriateness of the approaches (AHI vs DRD)

Lead questions/themes in discussing with researchers were as follows:

- How they felt working in an environment where scientists of different disciplines and from different institutions work together
- Whether they encountered any problems
- Whether they found it important to work in joint teams of researchers with different disciplines and from different institutions
- What motivation they have in working with researchers and farmers

Case studies of joint analysis of participatory research methods being used (AHI vs DRD)

The first step in this joint study was to develop a sound framework for the assessment of participatory research methods used in different projects/institutions that combined natural resource management. Using this framework (based on identified principles and values) different participatory methods used were assessed. The general objective of the study was to assess the different participatory approaches used by different projects in DRD and AHI in order to harmonize the approaches and come up with a common framework on which the research system in the DRD will operate. In the study 9 research projects using participatory research methods were picked up for in-depth analysis.

The selected case studies were:

- The Participatory Learning and Action Research (PLAR) on Integrated Plant Nutrient Management (IPNM) project based at ARI Mlingano, Tanga.

- The Participatory Plant Breeding (PPB) approach under the Eastern and Central African Bean Research Network (ECABREN) at ARI Selian, Arusha.
- The Indigenous Soil and Water Conservation Project (ISWC) coordinated by Cooperative College, Moshi.
- Farm-Level Applied Research Methods for Eastern and Southern Africa (FARMESA) based in Dar es Salaam.
- Sorghum and Millet Improvement Program (SMIP) based at ARI Ilonga.
- African Highland Initiative (AHI) in Lushoto, Tanga Region
- SADC/ICRAF Agroforestry Project in Tabora Region
- Lake Zone Client Oriented research Project (COR-LK) in Ukiriguru Mwanza.
- Integrated Residue Management Project at ARI Tumbi, Tabora

Results

Discussion with AHI Lushoto team about how they operated

In addressing NRM, AHI Lushoto deals with a range of institutions (Lyamchai and Mowo, 1999). These include SECAP, NTSP, TAFORI, TIP; researchers in NRM from SARI, ARI Mlingano and HORTI Tengeru, stockists, policy makers, the government machinery (DALDO, DED, DC, Local governments), farmer representatives and farmer groups such as UWALU and Lishe Trust) and religious institutions.

The process involves selection of partners who are committed to addressing NRM issues and exploring all possible researchable problems which are later prioritized. Selection of researchable problems is based on agreed principles and potential for success. Later resources needed are identified (within AHI and/or from partners). Roles to be played by each partner in all other phases of research (planning, write ups, implementation, monitoring and evaluation) are identified. Activities are jointly carried out.
The approach encompass multi-disciplinary team approach, Inter-disciplinary team, multi-institutional, working with stakeholders in the R & D process, developing a basket of technological options for different farmer categories to select what is feasible, specifically focusing on integrated NRM in mountain ecosystems (AHI area of specialization). Now this is actually the model most research programs are advocating.
The team felt advantaged by being able to locate most partners in Tanga region and nearby Arusha region. This has reduced the costs of organizing visits and meetings of partners.

Discussion with DRD staff on how research is planned

The DRD is a department within MAFS mandated to administer (coordinate) agricultural research in Tanzania. It is organized along 7 research zones. Research planning has been decentralized to the Zonal Centres. Participation of researchers of different disciplines and institutions within a zone is through operations of the IPR, ZTC and the ZEC. Research problem identification is either by single or multi-disciplinary approach and often involves farmers. Research proposals are first discussed at department meetings and later at Institute research meetings. Potential projects are forwarded and discussed at IPR (researchers and stakeholders). Approved projects go to ZRC (researchers and stakeholders). ZEC (policy makers, researchers and other stakeholders) make final approval for funding. Implementation (either on-station or on-farm) is by researchers and target farmers. Monitoring and evaluation is done by scientists and extension service. Adoption of findings is done by target farmers. It was evident that collaborative research projects had their own mode of planning and use different participatory approaches.

Discussion with farmers on the appropriateness of the approaches (AHI vs DRD)

Farmers felt that due to the nature of constraints being handled in the watershed, AHI needed expertise not only in agriculture, forestry and animal husbandry but also in other disciplines. Although farmers were not able to readily recognize researchers' disciplines, they were quite happy that research teams were able to address many issues involving livestock, crops, land and water. Farmers in other projects where single discipline

experts are involved (e.g. crop production) were at loss when confronted with livestock or water harvesting issues.

Discussion with researchers on the appropriateness of the approaches (AHI vs DRD)

Researchers felt that involvement of farmers ensures sustainability of projects since they consider them their property. By adopting a holistic and integrated approach to NRM rather than solving one problem at a time, and working in interdisciplinary and multidisciplinary teams ensures effective use of the available resources including manpower. Researchers now realize that by working closely with the farmers they are able to continually reflect on their performance, learn and gain experience from the communities they worked with. Through feedback researchers are able to revisit their strategies and approaches in time thus minimizing chances of making mistakes.

However, while AHI believes that the success in research in NRM requires collaboration (among professionals, institutions, farmers and farmer groups etc) with the skill mix and resources, researchers were concerned about high costs when involving many stakeholders (farmers, researchers, extension service, private operators) in an inter-disciplinary and multi-disciplinary manner.

CASE STUDIES OF JOINT ANALYSIS OF PARTICIPATORY RESEARCH METHODS BEING USED (AHI VS DRD)

Most cases did not incorporate broad aspects of implications of technology such as marketing and natural resources management aspects (AHI, 2002). Likewise the question of scaling up was not well addressed. The mandate of the research agenda is narrowly defined and the link between research and extension is weak in most of the cases studied. Integration of disciplines is weak with only multidisciplinary being well addressed. Interdisciplinary is not given due consideration. Reports from researchers are in a format that is not useful to farmers and feedback to farmers by researchers such as through use of extension materials and discussions is lacking. Most of the projects studied were fairly effective on three of the five impact areas identified. These are: Sharing of information and knowledge between farmers and farmers seeking for innovations to progress collectively, adoption and adaptation of improved techniques and practices, and orientation of farmers towards markets. The involvement of farmers in technology development ensures effective dissemination and adoption of technologies since farmers become part of the whole process (Rutatora et al. 2004). Of the cases studied AHI and ISWC were well ahead in this aspect.

The impact of the different cases on farmer organizations was also scrutinised. Aspects of farmer organizations are missing in most of the cases studied. In most cases farmer groups are built by outsiders with no due consideration to existing structures. A close look at the relationships between farmer research groups, interest groups and community organization is necessary. A farmer organization should have a life of its own and organizational structure and should continue beyond project life or researcher intervention. It is concluded that research is not yet addressing farmer organizations adequately rather it is mainly using farmer research groups induced from outside. The projects that targeted the right categories of farmers were successful as farmers adopted the technologies. Good examples of this were AHI, ISWCS, PPB and COR-LK. Chances of scaling up/out technologies differed among projects. In the case studies ISWC project was excellent in this aspect as technologies were able to spread beyond the targeted areas.

Discussion

Participation of farmers and other stakeholders in projects within the agriculture sector in Tanzania is recognized as a requirement for adoption of project outcomes. However, experience gained shows that participatory methods being used differ throughout the country. This has been realized in a recent discussion on this topic with various researchers, farmers and members of different institutions ((AHI, 2003). Based on the nature of issues being addressed AHI, for example, recognizes the importance of involving partners with different skills (inter-disciplinary) and from different institutions (multi-institutional) in carrying out activities.

There are many experiences which can be learnt from the approach adopted by AHI. AHI's approach has the ability to build upon not only on farmers' knowledge but also on the experiences of many participants. It enables social customs and cultures of the participating communities remain intact which ensures adoptability of outcomes. Partners feel they own and have a share in responsibility. Besides focusing on resource poor, the approach allows flexible and collaborative exchanges among participants. There is clarity on who participates in what activities which enhances team spirit among researchers. Adoption is often high since farmers' capacity to analyze their constraints, to identify opportunities and mobilize the services they need is high.

AHI's approach is not without problems. Involvement of different stakeholders results in high operational costs (travel costs, perdiems etc). The long time it takes to establish committed multi-disciplinary teams and build confidence with farmers is the other shortcoming. It often happens that scientists become committed to other duties and AHI has to re-organize its timing of operations. The extractive nature of the process (too much data extraction from farmers demanding a lot of their time) versus the need to balance with tangible benefits e.g. provision of attractive technologies e.g. high value crops etc.

In the case of projects and institutions working under DRD, many participatory approaches are being practiced. They vary from weak to strong integration of disciplines as well as from weak to strong use of services and/or experts of other institutions. Experience gained indicates that knowledge available in the community is not sufficiently explored as not many farmers are reached. Farmers' capacity to analyze their constraints, to identify opportunities and mobilize the services needed is low. It has been found that working under government budgets limits institutions' capacity to involve many stakeholders.

Recent strategies by government encourage stakeholder participation in many activities in the agriculture sector (URT, 2001; URT, 2002). Private and community-based service providers will be increasingly needed, hence, future interventions may need to support the emergence of such private service providers, and remove possible constraints to their emergence. Strong linkages and synergies are being encouraged between the range of private and public agricultural service providers, for example among research, extension, information and communication, training and technical services. Grass-root level farmers' or community-based organizations and networks are being promoted and strengthened to become key development partners. This is because success of various projects depends entirely on the stakeholders' consent. Such consent can only be achieved as long as the respective institution meets the stakeholders" expectations by providing required services or commodities. In order to be aware of the stakeholders' needs, the respective research institution must work very closely with them and communicate regularly with a view to create better relationship and understanding between both sides. The truth is that current policy emphasis and trends will see stakeholders requiring better services from the respective institutions.

In order to harmonize the different participatory approaches used by different agricultural research projects and come up with a common framework on which the research system in the DRD will operate, several actions are needed to be taken. There is need to develop effective linkage and partnership among stakeholders. This can be achieved by holding joint planning and review meetings with stakeholders, defining roles among stakeholders (researchers, farmers, organizations, extension department etc.) and establish stakeholder inventory analysis and identification of partners in the project area. There must be a shared need and agreed strategy to integrate different participatory methods in agricultural research. Wide scale formation of farmer groups, farmer field schools (FFS) and farmers associations should be encouraged in order to strengthen stakeholder participation. A close look at the relationships between farmer research groups, interest groups and community organizations is necessary.

Conclusions

The approach adopted by AHI Lushoto team where researchers of different disciplines and from different institutes and farmers are involved in identification of research areas is seen as a practical example of effective participatory method. By accommodating farmers' ideas, social and cultural issues, this approach ensures

adoption of technologies generated. A call is hereby made for MAFS to integrate and harmonize the different participatory approaches for effective technology generation and dissemination in Tanzania.

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Negotiating Agendas: Building Bridges across Boundaries

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The African Highlands Initiative operates an unusual organizational model that is meant to facilitate the integration of expertise so as to produce more effective, efficient working relationships between individuals with different disciplines working in a team, and in partnerships between research organizations and between research and development actors, and between researchers and the end users. Eight years of experience and work across international, national, and local organizations of various types provides a rich set of experiences from which to draw lessons on the overall agenda setting process at multiple levels and with multiple partners and perspectives. The facilitated process that was used in AHI at regional program level is described to move from individual institutional agendas to a more shared, over arching vision and framework which served as the 'reason for collaboration'. Various barriers and successes towards achieving 'buy-in' are discussed. Through AHI, agendas have also been negotiated in the national and benchmark site contexts (district and community). Linking agendas through these levels, each having their own perspective, has been challenging. So, how does one achieve a bottom-up process that has strategic links across the region? How does one negotiate these levels to gain appreciation between levels and actors? Various operational mechanisms are discussed and evaluated. To have effective performance and implementation of the various agendas, one has to foster and manage 'unequal' members and diverse teams at site, national and regional levels so they interact in a positive manner and understand their complementary roles and responsibilities. Propelling and dispelling factors, difficulties and achievements for effective, functioning to integrated, multidisciplinary team work and links between site and regional levels are summarized and lessons learned are presented. Various types of partnerships between research organizations are elucidated and progress lessons are reviewed. Analysis of partnership issues is made against a 'partnership assessment framework' that was developed for monitoring and evaluating these relationships.

Finally, strategies that have been used in different circumstances for managing and improving these processes within the AHI program and have led to different configurations and differing levels of 'success' in ensuring the contribution of research for development. Some examples of where research for development has worked well and has made a difference are highlighted to bring out principles for others.

Evolving Roles of Research Manager to Address New Demands and Challenges: NARI Manager's View and Implications for Research Institutions

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Over the past several years substantial amounts of research have been undertaken by National Agricultural Research Institutions (NARI) based in Tanzania. During this period, research managers have been subjected to assorted approaches, experiences and challenges related to aspects related to management of agricultural research such as different funding initiatives and philosophies, various levels of adoption and impact of developed technologies, as well as changes in policies - all of which have multiple implications for implementation. For decades support to the Tanzanian Agricultural Sector and related research was dominated by the Government with major assistance provided by donors. However, since the 1990s direct funding of research has diminished substantially, and donors have increasingly shifted attention to address more demand-driven, client oriented approaches to ensure impacts of research. This shift has greatly influenced the sustainability and direction of research. In order to optimise the use of limited resources and to adapt to this new focus, which is characteristic of the African Highland Initiative (AHI), has resulted in the urgent need for many research managers to establish more efficient ways of organizing and managing their agricultural research activities to accommodate more flexibility, efficiency, quality of service delivery and accountability. The need to identify strategies to empower farmers to identify their problems and promote their greater participation in identifying potential solutions to their problems has also been given greater emphasis to promote adoption and impact of developed technologies. Research managers have also been faced with the challenge of promoting a rapid shift from on-station, commodity oriented research, which dominated earlier research initiatives to accommodate more synergies through partnership and multi-disciplinarity at the farm and watershed levels. Partners involved in such an undertaking include the GOT, private sector, IARCs, farmer organizations, credit institutions, district councils to mention a few, with all stakeholders focusing on their respective contributions in improving smallholder production systems as a strategy to increase food security and alleviate poverty while conserving the natural resource base. Research managers have been faced with the challenge of identifying and promoting modalities for greater links between research institutions and the various partners to get to understand the roles of each other better in a changing system. This paper looks at the experiences of AHI in Lushoto as a model working arrangement and its implications to research organization in Tanzania in the context of the changing roles of the research managers.

Strengthening Community Learning and Change: The Role of Community Driven PM and E Systems

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Abstract

Community-driven participatory monitoring and evaluation systems offer new ways for strengthening learning and change at the community level. In this process, local communities agree on what changes they expect from their projects, what they need to do to achieve these objectives, identify local indicators to track these changes and finally identifying what factors can make their projects succeed or fail. The community-driven PM&E system serves as tool for strengthening the capacity of community-based organisations, especially farmer research groups, for process-oriented learning that supports self-reflection and shared decision-making. Learning to manage the PM&E process builds social and human capital assets of the rural poor which feeds into direct improvement of their livelihoods through more relevant and timely improvements on their projects and agricultural innovations, but also into a wider impact through improved capacity to make effective demands on service providers.

Although, there are various studies that focus on developing PM&E systems with the involvement of stakeholders, there are limited examples of where these systems are managed and supported by local communities, for their own purposes. This paper presents lessons from establishing community-driven participatory monitoring and evaluation systems within Enabling Rural Innovation (ERI) initiative in CIAT. These systems are being tested with various communities and partners in Malawi, Uganda, and Tanzania. Preliminary results indicate that there are several critical aspects in establishing these systems: (1) Developing a capacity building strategy for PM&E at the community level, is critical. Capacity building should includes diverse tools and methods that can encourage active participation of all members, such as graphics, role plays, stories from the farmers' daily lives, identifying local vocabulary for the technical terms, and using role-plays. (2) Ensuring that indicators are negotiated with communities and that communities focus on collecting information only on those indicators that are relevant, from their perspective. (3) The initial stages of establishing PM&E systems at community level require a strong mentoring and follow-up component from facilitators to ensure appropriate establishment of the project. (4) The PM&E systems provide relevant information that communities can use to improve the functioning of the projects, communication within the group, and for informed decision-making. (5) Integrating community indicators with project level indicators providing a more holistic view of the project benefits and can strengthen information feedback process between communities and R&D systems.

CEED: R&D Linkages; A Framework for the Integration of Diverse Learning Approaches

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Abstract

Coalition for effective extension delivery (CEED) is an alliance of five organizations that are supporting the capacity building of farmer groups and local institutions to respond to the changing system of demand-driven development processes specifically agricultural service delivery in line with National Agriculture Advisory Services (NAADS) vision. The CEED coalition members include CARE international-Uganda, the African Highlands Initiative (an eco-regional program), Kabale District farmers Association- KDFA (a farmer-owned institution linked to a national level federation) Africa 2000Network and Africare both international NGOs. CEED focuses on empowering poor farmers and their institutions to be active participants in the demand-to-delivery processes, and especially improving their capacity to influence policy development and play their role in the services delivery process. For decades farmers and government officials alike have become accustomed to the government providing (unsolicited) services for farmers. Reversing roles giving farmers the decision- making power in selecting services is a new challenge for all parties. Through farmer groups and farmer forum, communities are taking on new roles and expectations with enthusiasm, although competencies in group management, agroenterprise development and monitoring of the implementation processes are still needed. The empowerment process is geared towards preparing farming to take the new opportunities in the context of NAADS. The coalition members conduct participatory workshop at the community level to identify challenges in implementation of the NAADS program and negotiate on solution for the same. The CEED process has enhanced multi-stakeholder participation in developing a mutually negotiated vision for the farmer institutions, strengthened linkages among the coalition members and brought to surface complementarity among coalition members. This papers sheds lights to the lesson learned and new agendas and frontiers that are evolving which require the attention of a coalition.

The INSPIRE Experience of Working with Farmer Field Schools and Land Management Initiatives in Eastern Uganda

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Abstract

The inspire consortium was launched as an African network in 2001 in collaboration with the local district administration in Tororo district, Uganda. It consists of representatives from Makerere University, NARO, ICRAF, TSBF-CIAT, Appropriate Technology, Uganda National Farmers Assocation, Food Security and Marketing project (FOSEM), Africa 2000 Network, Sasakawa Global 2000, farmers, the District Agricultural Extension and local administration. The main roles of the lead organization are to synthesize data, develop fact sheets, facilitate on-farm evaluation, test improved soil fertility management practices and overall documentation and reporting. The main achievements of INSPIRE to date include the expansion of support for MSC and PHD students, the production of extension leaflets, project staff training across partners, and an increased awareness of soil fertility management needs in the district. There are three farmer field schools (FFS) projects running in Eastern Uganda in relation to INSPIRE. The focus of these three projects are: Soil Productivity Improvement (SPI) with support from Rockefeller foundation in Tororo and Busia districts; Conservation Agriculture (CA) through FAO TCP to the Government of Uganda (NARO) in Mbale and Pallisa districts and; Integrated Nutrient Management for Soil Productivity Improvement (INMASP) with support from EU to Makerere University in Pallisa district. The pilot projects have provided a common understanding of cross-cutting issues such as poverty alleviation, gender mainstreaming and HIV/AIDS to the communities and other stake holders and a common understanding of the need for a practical approach on how to integrate them into agricultural interventions at planning, implementation and monitoring levels. Many of the lessons learned from these FFS are associated with livelihood improvement and greater capacity building related to appropriate education and skills training, and incorporating a diverse stakeholders.

Chapter 8:

Emerging NRM Research Issues

Institutionalization and Scaling Up into NARIs and NGOs: Approach, Challenges and Lessons

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Abstract

The African Highlands Initiative (AHI) has collaborated with the National Agriculture Research Institutes (NARIs) in undertaking INRM work in the highlands of Eastern Africa. More often, collaboration has stretched beyond NARIs to include communities, civil society and non-governmental organizations (NGOS). The mode of working has been through the use of participatory approaches that bring stakeholders especially communities to the forefront in the design and implementation of research agenda. Since 1995, AHI in partnership with CIAT has promoted the use of participatory research, integrated research teams and muti-institutional collaboration among partner organizations that have been largely conventional and " top-down" in their approaches to working with communities. The lessons learned have been the basis of spearheading institutionalization and scaling up work within the collaborating partners and beyond such that the new approaches become part of the new way of conducting research that is responsive to the need of the farming communities and other land users. This paper gives an account of the approaches, lessons and challenges in the efforts to institutionalize the new approaches within national agriculture research organizations and NGO that have collaborated with AHI and CIAT.

Introduction

Despite the evidence of benefits of participatory approaches (Biggs, 1989; Richards, 1989; Ashby, 1996; Sanginga, et al, 2001), their incorporation, quality application and finally institutionalization in agricultural research organizations has been slow. Presumably, profound changes in research policies and practice are needed (Hall and Nahdy, 1999; AHI 2001; Buar and Kradi, 2001; Stroud, 2003).

In the Catholic Relief Services (CRS- EARO) and its Learning Alliance with CIAT (through its Rural Agroenterprise Development Project) and Foodnet**,** the links between agricultural research and development institutions associated with the small farm sector have been weak, with a poor record of adoption of innovations in terms of either technologies or methods, coupled with non-existent means by which the results of successes or failures can be fed back to the research process. CIAT and FOODNET have at their disposition methods and tools for capturing and systematizing market information, identifying market opportunities for small rural producers, and a participatory approach to the design of integrated commodity or market chain projects.

AHI is approaching institutionalization and uptake of lessons from use of participatory research approaches and processes through competence development and lessons sharing with manager of the NARS, researchers, collaborators (Extension and NGOS) and target communities. A series of workshop with the NARS managers and researchers are being conducted to generate a shared vision for the desired change and competences (professionalism needed) to deliver effective research products to the target beneficiaries.

Background

AHI's current mandate is to deepen capacity and use of integrated NRM principles and participatory methods that will result in role changes beyond technology development. This "paradigm shift" requires change in researchers' attitude, behaviour and practice and, to a large extent, institutional operations, arrangements and values that support the changes in practice.

Institutionalization is defined as the process whereby practices become regularly and continuously repeated, are sanctioned and maintained by social norms, and have major significance in the social structure, organizational procedures and staff performance (Springer- Heinz, 2002). The extent to which participatory methods become part and parcel of research organization operations is pivotal to the success of integration of these methods, and is core of AHI activities under methodology development and up-scaling within the NARS and beyond.

A Learning Alliance between CIAT, CRS (NGO) and Foodnet is an attempt to put into practice a new model of mutual learning between research and development institutions, to enhance uptake and institutionalization of innovative concepts, methods and technologies that are aimed at improving the competitiveness of smallholder production.

Principles of Learning Alliance

- Clear objectives
- Shared responsibilities
- Outputs as inputs
- Differentiated learning mechanisms
- Long –term relationships

There is pressure mounted from donors and rural communities for more effective development outcomes from research findings, research centers, and the international research centers in particular, are constantly searching for effective mechanisms.

The Learning Alliance concept is one attempt to advance and see institutionalization of key principals for successful rural enterprise development identified as (a) an entrepreneurial, market oriented focus; (b) participatory decision-making with partners; (c) a focus on strengthening existing local skills as well as building new ones; (d) a search for consensus among multiple actors; (e) equal access to opportunities for participating groups, and; (f) social, economic and environmental sustainability using a teritorial approach. All these will contribute to improvements not only in research focus (i.e. help research institutions identify their comparative advantages and niches vis à vis development partners) but also in the dissemination of good practices for collaborative learning to people and organizations with sufficient capacity to facilitate effective change, and thus lead to institutional learning and change processes that favor the rural poor.

Objectives

- This paper shares factors that that enable or impede uptake and institutionalization of participatory and new approaches within research and development organizations by comparing experiences from NARS and non- governmental organizations.

- Stimulate debate on the lessons gained and mechanisms needed in the way forward by carrying out an analysis of lessons from pilot cases in ECA region. Research questions

Hypotheses

- Institutionalisation of participatory research is contingent upon an interplay of factors, including external conditionalities, internal organisational arrangements and individual knowledge, attitudes and beliefs.

- Action learning processes triggers opportunities for individual and organisational reflection that lead to learning, innovation and understanding of changes needed, and of how to operationalize these changes, finally resulting in organizational change process.

Research Questions

- How is participatory research articulated within the context of R&D agencies?
- What factor enable and or impede the uptake of new research approaches?

- What are the implications of the new research approaches for organizational learning, institutionalization of participatory research, innovation and change?
- What is the perception of participatory research and how is it linked to the philosophy or R and D agencies?
- What is considered as indicators of best practices in participatory research and agro-enterprise selection and development?

Methodology

The sample population in this paper are the NARS managers, researchers and their collaborating partners from NARO in Uganda and EARO in Ethiopia. The author is collecting and documenting information on institutional change work as part of his doctorate study. The information is this paper was collected using multi-site ethnography, focused group discussions, participatory workshops and individual interviews since 2002. Responded include managers, researchers (and extension staff) and farmers (individuals and groups) that participate in regional and in-country works and participatory research activities and thus sampled purposively. The concept of culture theory is used to distill information on organizational practices, values and norms that influence interactions and uptake of new ideas and learning. In each of the participating countries workshops that bring managers, researchers and collaborating partners are convened aimed at self- assessment of progress, success stories and barriers to delivery of quality research. Each of the workshops/meetings ends with an agreed action plan on the actions to be undertaken until the next workshop is convened and new insights a shared leading to re-planning and re-implementation. .

Results

In AHI and CIAT cases, *the shift from a relief/production approach to a market/enterprise orientation* brought the challenge of working with a new client base, which involves the many other actors in the marketing chain, i.e. traders, processors, retailers, other specialist private sector groups and providers of business support services. This requires new skills (communication, negotiation and facilitation), professional (marketing specialties), approaches and tools to enhance impacts. AHI has steered the NASR in fostering interdisciplinary and inter-institutional work, policy linkages, participatory research and building on farmers/ local innovations and knowledge. Unlike in the CIAT-CRS case, where not all participants in the learning initiative are suited nor may wish to participate in a Learning Alliance process, most of the NARS scientist in AHI context were keen on gaining skills in new methods and participating in institutional change process. In all cases, staff turnover and consistency of participants in learning events affected the progress of planned activities. For example, in CRS case, changes in participants during the process truncates learning and necessitates that the other participants wait while the new arrivals get up to speed.

In the case of CIAT- CRS institutional learning and change has been noted. Ownership by the CRS country participants and their partners has increased as the process has progressed and tangible results are being observed. In some countries, CRS is now recognized as having a capability in market and agroenterprise development and other government and non-government organizations are seeking their support. In the case of AHI, evidence of researchers and their managers owning the institutional change process is gradual. R&D agencies are undergoing tremendous reforms as demand for client oriented and, market led research and development is being focal. In terms of hosting of the research institutions, evidence of occilation between the NARS being autonomous parastatals vs being under the ministries of agriculture in respective countries is noted. Researchers and managers in the pilot NARS countries attested to the fact. Much of researchers' and research managers time was being spend in working aimed at assessing their internal arrangements and coming up with ways of improving their service delivery.

- Researchers involved in participatory research activities suggested that their colleagues do not think it is an approaches that works for research activities. The debate about where the science and rigour is rampant. Individual upbringing, profession and training background shape the perceptions (positively or negatively) for or against upatake of new research approaches.

- Farmers are less willing to participate in all stages of research because of past experiences with the projects that gave them *compensation* for their land and labour. This the drive for handouts form projects is common, although farmers that participate in these activities genuinely are there and are benefiting.

- Demonstrating the impacts of participatory researchers vs conventional research and how the latter is linked to the market is a key challenge.

- Knowledge in participatory research is acquired through on-job training and universities and colleagues hardly teach these methods

In the AHI case, opportunities that potentially enable institutionalization of PR, approaches and innovations were observed and included

Policy environment that is emphatic to decentralization of development and research programs. In the two countries, I found that the government policy of decentralization and market led research of development programs was giving rural communities and stakeholders the opportunity to initiate development activities based on the priority needs of the communities. This was shift from the supply led development processes were the government was providing all the needed development projects and the communities were passive recipients. This shift towards decentralization is line in with the principle of participatory approaches of including the target groups in the R&D endeavours. A leader of the farmer research group said, the government policies are making the local administrative leaders and project staff to consultative meetings where we point out our development priorities and make decisions on where to start". The integration of marketing is a stimulus to the desire to generate income and food out of the farmer research group activities. Within the NARS there are projects that support and fund participatory research activities such as the Client oriented Research programs in EARO and DRD.

- Within the NARS new vision and strategies for new ways of doing business are being developed. For example, The Strategic Management Plan (SPM) by EARO, programs and research stations and the NARO/MAK/ICRA learning initiative in which the needs and preferences of the clients that are geared towards market orientation are articulated.

- Researchers competence in concept and application of participatory approaches that is being built through (i) training in new research methods and (ii) exposure visits to other projects where participatory project were advanced.

On the other hand, some challenges have been noted in the AHI case;

- Researchers noted emergence of diverse and confusing concepts as new project get started. For example, in EARO, projects such as Farming System Research (FSR), Farmer Participatory Research (FPR) and Client Oriented Research (COR). They are alls striving to address the needs of the farmers but with different strategies and funding sources. The point at which these projects converge is missing.

- Diverse methods for entering and working with communities and stakeholders are stated in all the new project. The challenge is how to integrated the methods and processes that each of this projects stand for. For example, IFAD supported FFS approaches, while COR and AHI have supported and facilitated formation of farmer research groups.

- Commodity programs (and division): Hierarchical arrangements and decision making from the top management of EARO down to research stations, programs and individuals. Programs are organized along commodities and mechanisms for integration are blurred if not absent, albeit for the annual review meetings that are conducted once a year.

- Incentive mechanism : The promotion is staff (researchers) is based the length of service in research and also the numbers of scientific and refereed publication produced by individual researchers on annual basis. This does not recognize work that is conducted in teams or the outcomes that are accruing to the communities nor failures when projects are being implemented.

- Coordination and harmonization of activities. Different projects that were implemented had different time spans and outputs to be delivered (FSR, COR, AHI, etc). This is coupled with weak links with partners from universities and NGOS that are working on participatory issues. This was attributed the fact that NGOS for example have their mandates and accountability mechanisms to the donors.

- Budget allocation from core funds. For example, researchers noted that EARO does not continue supporting the projects that support participatory approaches when they phased out. Even if they do, the funding levels are very small as compared to what the external donors were committing.

- Competence development program was found limited in some aspects such as personal development. As researchers are challenged to work with communities and diverse stakeholders, competencies to organize and manage stakeholders are limited. For example, researchers are not intensively trained in facilitation, negotiation and or process documentation skills. Researchers are appointed to manage broad program with the assumption that since they are good scientists they will automatically work with communities and also manage stakeholder platforms.

Policy environment impediments

For example, the Ethiopian government desired for imported technologies. The government of Ethiopia feels obliged to meet the food security needs of the country in order to ameliorate the chronic food insecurity that is experiences. Standard Extension packages program under the Ministry of Agriculture. Although the packages that farmers get were meant to boost their productivity, the packages are designed with no attention to the heterogeneity of the households and variations on AEZ. Food for Work programs through WFP- World Food Program adopted the Food for Work strategy as a means to stimulate communities to adapt and adopt natural resources conservation measures. For example, farmers worked on soil bund conservation, gully control, tree planting, road construction at a daily wage of 3kgs of wheat per day. High turn over of researchers and managers- this is affecting continuity of programs.

Conclusion

IMPLICATIONS TO CHANGE

Organizational change and willingness to pilot new research and development approaches are needed. By institutionalizing new approaches with organizations, the status quo is challenged and concerted efforts are needed to develop a shared vision between the top management and the intermediary levels.

Engaging all levels

In Ethiopia and Uganda AHI, with the involvement of a process change consultant in collaboration with the NARS managers and researchers are undergoing training to broaden orientation in new ways of conducting research. In Uganda all the zonal agriculture research and development center teams are getting training in integrated agriculture research for development to broaden researcher beyond technology generation and dissemination. The new orientation includes focusing on innovation for different typologies, zoning of agroecosystems, market chain and livelihoods analysis. On the other hand, in Ethiopia, the top manager of EARO, the center managers of research station and representatives of regional research and universities are brought together to assess internal barriers to institutional changes, new competences needed for managers, researchers and farmer, feedback culture among researchers and managers and among peers, and

documentation of successful technological stories and how they fit in the innovation systems approach. All these efforts are still on going.

For effective institutionalization the research managers and their teams are seeking better ways for forging partnerships with non-research partners (in a new environment) where extension staff is being retrenched like in Uganda on one hand and also with NGO with different approaches and mandates such as handing out seed to framers vs training farmers to produce their own seed on the other. Secondly, market integration is now an ingredient in assessment of new workplans and proposal. All the NARS in the region are striving to have their technologies find their ways into the market. However, the researchers especially the biological scientists do not have that adequate skill for new orientations especially for market integration in their work by the nature of their professional training. The professional training of most of the NARS scientists is skewed toward generation of new technologies for high productivity. More capacity building is needed in this aspect as is also needed in new areas such facilitation, negotiation, innovation systems approach and action research skills.

Piloting Action research

McNiff (1988) suggest that action research enables the actors to engage in self- reflective inquiry to improve rationality of their own rationality and practices. In the institutionalization work, the managers and researchers are encouraged by AHI to view themselves as researchers so that they make a deep analysis of the changes that are needed in the systems in which they live. The conventional ways of research is that the researchers and their managers are experts that know and decide in advance what is good for them. Therefore with the action research methodology, AHI is engaging on the one hand with researchers and managers through a process of change by encouraging them to be aware of their own practices, to be critical of that practice and to be prepared to change it and farmers on the others.

New professionalism

The need to institutionalize new and approaches and upscaling catalyized by the emergence of innovation systems approach and demand for rapid impact are posing challenges to the way research is to be conducted. Conventionally researchers are trained to be “teachers” when they graduate as they are viewed as the experts and custodians of knowledge. Universities and other professional institutions reinforce the teaching paradigm by giving the impression that they are custodians of knowledge which can be dispensed or given (usually by lecture) to a recipient (a student) (Pretty and Chambers, 1993; Pretty, 1998). Normally, professionals are single-disciplinary, and are concerned with generating and transferring technologies. This perception and beliefs by researchers differ with people's conditions and priorities.

Becoming learning organizations

Accompanying change towards new professionalism is need for organizations to become learning organizations (Senge, 1990; Pretty, 1998; Senge, 1999). The NARS have to endavour to ensure that staff are aware of their changing environment, and the way they learn, both from mistakes and from successes of their research work. Organisational learning is considered a key discipline for dealing with the “white water” of dynamic, unfamiliar and uncertain contexts (Pasteur, 2004). Currently the NARS scientist and managers are working in the context of reforms and multiple realities and expectations which have to be understood through multiple linkages and alliances, with regular participation between professional and public actors for impacts of research intervention to be felt. It is only when some of these new professional norms and practices are in place that widespread impacts in the livelihoods of farmers and their natural environments are likely to be achieved (Pretty, 1998).

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Enabling Rural Innovation in Africa: An Approach for Integrating Farmer Participatory Research and Market Orientation for Building the Assets of Rural Poor

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Abstract

There is a large body of literature indicating that farmer participatory research (FPR) is vital for reorienting technology development, accelerating adoption and creating wider impacts of agricultural technologies in small-scale farming. Generally FPR has not been targeted to enable farmers to access existing and new markets, or diversify and increase their income sources, and generally having a strong 'empowerment' dimension. FPR, as conceived and practiced by most research organizations, has been looking more towards research products that assist development rather than towards enabling a development process with research inputs. Recent initiatives are demanding more from research. Prior initiatives to link farmers to markets have focused on export crops and regional and international trade and lack a process of community learning and building local capacity to solve problems in production and marketing. This paper outlines a novel approach for demand-driven and market-oriented agricultural research and rural agro-enterprise development. This approach termed Enabling Rural Innovation (ERI) offers a practical framework to redirect and link FPR and participatory market research (PMR) in a way that empowers farmers to better manage their resources (human, social, financial, natural) and offers them prospects of an upward spiral out of poverty. The ERI approach uses participatory processes to build the capacities of farmers, farmers' groups and communities to identify and evaluate market opportunities, develop profitable agro-enterprises, intensify production through experimentation, while sustaining the resources upon which their livelihoods depend. Research and development partners need effective facilitation skills for provision of market and technical information, and building human and social capital of rural communities, with focus on gender and equity in the access to market opportunities and technology innovations, and in the distribution of benefits and additional income. The key steps and principles of ERI include: building and managing effective partnerships, participatory diagnosis building on community assets and opportunities, rather than constraints and problems; building farmers' capacity for market opportunity identification and agroenterprise development, stimulating farmers' experimentation processes to access, generate and adapt knowledge and technologies; participatory monitoring and evaluation processes for critical learning and reflective feedback for scaling up and out promising options and innovations. The paper illustrates the application of ERI with case studies from pilot sites in eastern and southern Africa.

Conflicts in Natural Resource Management

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Abstract

Conflicts and disputes, both violent and non-violent are ubiquitous, especially in situations where control over resources is being negotiated. In the field of natural resource management (NRM) there are differing conceptions of 'biodiversity', 'ownership', 'environment', and 'development' in which are embedded conflicting ideas. There has been a lot of research into NRM conflicts, but there is little recognition of the root causes. Participatory, open-ended stakeholder identification and analysis are key. Environmental Governance refers to the processes of decision-making and the processes by which decisions are implemented. Different definitions of governance put emphasis on participation, processes, institutional arrangements, accountability, and building constituencies for environmental management. These can be examined at global, regional, national or local level. A conception of environmental governance which emphases the balance of power – the politics of decision-making – will get closer to understanding the roots of conflict than one which is more strictly 'technical'. Historically, in many parts of the developing world, power has been centralized, (a command and control approach) and conflict over natural resources was often quashed by the state either through the threat or use of force, or through co-option (as per the colonial model). Through the current vogue for decentralization, central government should take on a role of monitoring and technical support. Decentralization of NRM is especially appropriate, because: a) resources are a direct source of profit (not a long-term, intangible investment such as health or education); b) people rely upon natural resources daily, hence pressure for participation; c) effective NRM requires local knowledge. Decentralization requires transfer of powers and an accountable representation. Transfer of discretionary powers should be in form of secure rights, not 'privileges' which reduce autonomy. Examples of decentralization from Kabale, Uganda and Rwanda show differing outcomes and impacts. In Kabale, financial and human resources are inadequate and poor revenue collection and utilization reduces the effectiveness of local-level governance. In Rwanda, the level of popular participation is questionable and varies across districts and communities. Rwanda must also address underlying issues of post-conflict identities. NRM is even more likely to be conflictual than other kinds of development interventions because the stakes include such fundamental issues as economic livelihoods, a sense of community, and boundaries of political autonomy and/or control. When groups disagree over interests, this is not a conflict but is rather a dispute. Conflict is qualitatively different, arising from disagreements over values and ideology. Values include perceptions of rights, and are linked closely with issues of identity and freedom; things about which we cannot easily negotiate. Environment and land use can be part of spiritual beliefs, cultural values, etc. (e.g. transhumant pastoralism as a way of life; maize for indigenous Amerindians, Tavy in Madagascar). While a dispute can usually be settled through arbitration or through a court process, conflicts can only be resolved by a change in perceived underlying injustices or inequalities. Gender problems are not usually seen to be associated with conflicts, especially in patriarchal societies: but women are often influential behind the scenes and the lack of involvement of women can lead to domestic disputes, and project failure. Conflict analysis begins with determining the nature of the conflict and certain boundaries (geographical, temporal etc), identifying the actors and key stakeholders. Conflict Mapping can help to separate 'needs' or 'interests' from 'positions' (e.g. the extent of resource use, now and in past and future). There are many kinds of mapping methods, including sketching (based on use of twigs, string, etc), GIS, and 3-D modeling. Mapping can be especially useful for understanding multiple access rights, peripatetic communities, and remote (unmapped) zones. While much attention has been paid to manifest, violent conflict, the overarching conflict in NRM is fought not with knives or guns but with pens, word processors and websites. Due to the influence of the 'development machine' on fundamentals such as land tenure, the role of local leaders, and the boundaries of protected areas, conceptual conflicts can be traced to local 'manifest' conflicts. The battlegrounds of NRM conflict are not only the rural areas of the developing world, but also the conference rooms and libraries of the global environmental management and development sector.

A Framework and Process for Operationalizing INRM: Experiences, Challenges and Implications for the Future

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The African Highlands Initiative (AHI) has been aimed at solving land degradation and poverty issues through more effective approaches and building capacity to use these approaches. Through a facilitated and consultative process involving stakeholders, AHI has formulated an Integrated Natural Resource Management (INRM)[1] framework and a process that can provide orientation for research and development organizations to achieve effective natural resource management and improve livelihoods. The framework, its elements and implications for individuals, organizations and partnerships, along with experiences to date are discussed. Stakeholders have pointed out through analysis that the most limiting factor for development is not technology alone, but rather that weak functional integration of research, limited application of research for development, and limited genuine involvement and competence development of beneficiaries are also major deficits. In other words, social and institutional deficits and strategies to ensure functional contributions of research to development are key at this point in time. Thus, it is reasoned that paradigm shifts are required in work and relationships: scientist-driven, reductionist research to be augmented with client-driven, team based systems research where one approaches technical aspects of the system from social organization and institutional perspectives; studying the system from outside to understand it towards working within the system to change the system (using action research); farm level intervention towards considering multiple levels of analysis and intervention (watershed, district, policy); and a training or teaching (more top-down) approach to a more equitable learning and adaptation approach, where partners (grassroots, NGOs, private sector) knowledge base is more 'equal', and building of skill base and ability to adapt through experience and learning is the thrust.

These shifts require new negotiated roles and responsibilities which question tradition, challenge existing institutional culture and associated behaviour, and ways of working. In particular, the question of 'researcher's role', their commitment towards making an impact in often un-enabling institutional environments, and the type of contribution through science are looming issues. How and when can the framework and processes be best applied? What are strategies for and ways to manage necessary institutional change so as to move into the new R4D paradigm? What are the strategies and means by which the necessary institutional and individual competence is needed to carry out new ways of working? How can other R&D actors and organizations be brought on board?

[1] INRM is an approach tackles the complex of NRM and livelihood issues by: integrating multiple sources of expertise and perspectives using collaborative, strategic partnerships and team work; promoting facilitated dialogue and improved inter-institutional links with development organizations, policy makers and the private sector; working at multiple levels and scales with a wide variety of actors so as to differentiate and solve problems for various strata and conditions; utilizing a range of participatory methods that foster stewardship of natural resources, are inclusive of women and the poor, value local knowledge, and build local capacity; and use experiential learning and systematic monitoring for continuous progress for innovation and application of the approach. The new term for this is Integrated Agricultural Research for Development (IAR4D).

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