NATURAL RESOURCES SYSTEMS PROGRAMME

FINAL TECHNICAL REPORT[1]

ANNEX A

DFID Project Number

R8381

Project Title

Institutionalised Scaling-up and Uptake Promotion of Outputs from Soil and Water Management Research in East and Central Africa. Scientific report.

Project Leader

Prof. Nuhu H. Hatibu

Organisations

SWMnet - Soil and Water Management Research Network *of*
ASARECA –Association for Strengthening Agricultural Research in Eastern and Central Africa, *in partnership with*
ICRISAT - International Crops Research Institute for the Semi Arid Tropics
ARTC - Agricultural Research and Technology Corporation of the Sudan
EARO - Ethiopian Agricultural Research Organization
KARI - Kenya Agricultural Research Institute *and*
DRD - Department of Research and Development – Ministry of Agriculture and Food Security - Tanzania

NRSP Production System

SA 1.3.1(f) cross cuts to HS 1.3.3(d)

Date

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Abbreviations and Acronyms

ARTC	Agricultural Research and Technology Corporation of the Sudan
ASARECA	Association for Strengthening Agricultural Research in Eastern and Central Africa
ATIRI	Agricultural Technology Information and Response Initiative of Kenya
CGS	Competitive Grants Systems
CIM	Conceptual Impact Model of NRSP
CORMA	Client-Oriented Research Management Approach
DFID	Department for International Development of the UK
DRD	Department of Research and Development – Ministry of Agriculture and Food Security - Tanzania
DVD	Digital Video Disc
EARO	Ethiopian Agricultural Research Organization
ECA	Eastern and Central Africa
FAO	Food and Agriculture Organization
GTZ	Germany Agency for Technical Cooperation
ICRISAT	International Crops Research Institute for the Semi Arid Tropics
IMAWESA	Integrated Management of Water in Eastern and Southern Africa
KARI	Kenya Agricultural Research Institute
KMS	Knowledge Management Systems
MDGs	Millennium Development Goals
M&E	Monitoring and Evaluation
NALEP	National Agricultural and Livestock Extension Programme
NARES	National Agricultural Research and Extension System
NARS	National Agricultural Research System
NRM	Natural Resource Management
NRSP	Natural Resources Systems Programme of DFID
PG	Post Graduate
R4D	Research For Development
S&WM	Soil & Water Management
SUA	Sokoine University of Agriculture
SWMnet	Soil and Water Management Research Network of ASARECA
ToT	Training of Trainers

EXECUTIVE SUMMARY

The purpose of the project was to ignite a process towards the institutionalization of a culture of promoting uptake, scaling-up and effective use of results from research on soil and water management in Eastern and Central Africa. The project was designed with three outputs to: 1) increase the understanding of barriers that limit effective uptake promotion, 2) raise awareness of research managers on the need to put emphasis and investment in uptake promotion, and 3) improve the capacity and skills of researchers on relevant approaches.

To deliver the first output, the project conducted case studies in Kenya, Tanzania, Ethiopia, and Sudan. The appraisal was guided by eight hypotheses investigated through an analysis of data from: i) policy documents at government and institutional levels (mainly research organizations and universities); and ii) semi-structured questionnaire interviews of researchers and policy makers. The findings show that:

i) Policy and strategy documents of government ministries, departments and relevant organizations, recognize and put a lot of emphasis on ensuring that results from agricultural research reach the farmer. However, this emphasis has not been turned into action.
ii) The role of research systems in uptake promotion is not recognized due to mind set on uni-directional dissemination of results from research to extension to farmers. Therefore, only a limited amount of time and budgets are allocated to project activities concerning communication, uptake promotion and scaling-up of research results.
iii) The majority of researchers are not adequately trained for communication and uptake promotion. They consider this to be the main reason for the little communication and uptake promotion currently being implemented by researchers.
iv) Monitoring and evaluation of projects do not include assessment of uptake, utilization and impact of research results. Therefore, rewards and incentives such as salary increments, promotion and prizes do not demand evidence of utilization and impact of research activities.

In view of these findings, it is recommended that:

i) Because the policy support is generally in place, research organizations should design and implement strategies and provide adequate funding for knowledge management, uptake promotion and scaling-up.
ii) Researchers should fully participate in uptake promotion and scaling-up activities as part and parcel of research projects and should package their results into products that target the different needs and circumstances of their stakeholders.
iii) Relevant organizations should implement a massive and intensive professional development programme on knowledge management, including prospecting and brokering. In addition, the training curricula of graduate programmes should be reviewed to include skills in communication, uptake promotion, and scaling-up.
iv) Researchers should be required to produce proof of uptake and effective scaling-up of research results as part of the criteria for promotion, salary increments and other incentives.

The second output was delivered through an extensive awareness raising and advocacy programme that included meetings, presentations and communication through print and electronic media, including a documentary video. This programme targeted and reached policy makers such as ministers, directors and most importantly senior research managers. It

is estimated that between 700 and 800 stakeholders were reached by these efforts. This has started to show some effect at both regional and national levels. At ASARECA level, plans are underway to develop an institutional strategy for knowledge management and sharing while scaling-up and uptake promotion is already a common feature in programmes and projects promoted by ASARECA. Two major programmes are already being implemented and one is under preparation, focusing entirely on turning knowledge into action.

For output three, two major courses for professional development and training of trainers were designed, implemented and promoted for use by others. These are:

i) SWMnet professional development course on preparation and implementation of projects on R4D. Module 4 on knowledge management, uptake promotion and scaling-up has been widely adopted by other networks of ASARECA, and has been delivered to nearly 250 researchers in the region. This has tremendously increased the capacity for preparing and implementing communication planning and uptake promotion in the sub-region. The effect is already being seen in the proposal documents of new projects.

ii) SWMnet professional development and training of trainers' course was designed and implemented at regional and national levels. Participants invested the highest proportion of time in working groups and feedback seminars. They developed recommendations of how to mainstream knowledge management and scaling-up of research findings in the region and own countries.

Evidence is provided in Appendices attached to this report to show that new research plans across the whole region and not just in the target countries, contain robust communication and uptake promotion plans. Although there is no hard evidence yet, it has been resolved to improve courses given to graduate students on research planning to include a strong emphasis on communication strategies, the champions generated by the project have already initiated a concrete advocacy process towards this.

1 INTRODUCTION AND BACKGROUND

This report describes results of a project implemented over a period of 18 months (May 2004 – October 2005) in Eastern and Central Africa under the auspices of ASARECA[2]. The report is divided into four chapters, which are supported by six appendixes (I - VI) and two major annexes (B and C). The introduction section provides a brief description of the justification, project objectives and a summary of the literature review which is presented in more details in Annex C.

1.1 Overview and Justification

There is an increasing realisation that one of the leading causes of poverty and hunger in Sub-Saharan Africa is inadequate and unsustainable utilisation of renewable natural resources for wealth creation. This is so despite the fact that natural resources management has received a lot of research and development investments since Agenda 21 was published in 1992. Furthermore, most countries in Eastern and Central Africa (ECA) have maintained agricultural research organizations for more than 50 years. During this period, these organizations have produced research information, developed knowledge and released several technologies, especially crop varieties. However, relatively little impact has been registered because only a small proportion of research results or good practices from development projects are scaled-up, accessed and utilized by the poor, their support agents, and policy makers. Hence, it is now being realized that the intended end-users have not taken up most of the knowledge recommendations and technologies from research investments. As a result of this, the productivity of smallholder agriculture remains very low and in many cases has decreased dramatically. The global agenda for delivering the MDGs has identified increased utilization of existing knowledge and technologies as a critical point of departure (Box 1.1).

Box 1.1: Increased Utilization of Existing Knowledge and Technologies – a key factor in delivering the MDGs

In its report published recently, the millennium task force on Science, Technology and Innovation noted that: *the challenge facing the global community is to create conditions that will enable developing countries to make full use of the global fund of knowledge to address development challenges*. For this to happen the report calls for: *increased ability of developing countries to conduct knowledge prospecting, that is, the searching, identifying, adapting and diffusing knowledge and technologies from all sources*.

Millennium Project – STI Task Force, 2005

There are many reasons for the apparent little utilization of research results, but it has been observed that one of these is that only little effort is directed to the scaling-up of best-bet knowledge and technologies which have been found to do well in pilot sites. This realization was recently summed up by the UN General Secretary, HE Koffi Annan who in 2004 stated that: The *knowledge* required for Sub-Saharan Africa to achieve its own green revolution *is not lacking, what is lacking as ever, is the will to turn this knowledge into practice* (MDG Technical Support Centre, 2004). Therefore, the study reported here was designed to find out why there is this lack of will.

[2] The Association for Strengthening Research in East and Central Africa (ASARECA) is a non-political organization of the national agricultural research systems (NARS) of ten countries: Burundi, the Democratic Republic of Congo (DRC), Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda.

1.2 Project Objectives

This project was driven by the **mission** of the Soil and Water Management Research Network (SWMnet) of ASARECA which is stated as: *to assist stakeholders in the ECA sub-region to gain access and effectively utilize the best locally and globally generated knowledge, information and technologies on soil and water management.* The project was initiated from the realization that this mission of SWMnet can not be achieved without a wholesale change of culture. Without a culture to turning information into knowledge followed by adaptation of the knowledge to generate innovations, research results would hardly be put into use (Janssen, 2002). This is because often research results constitute data and information which requires capacities and investments to convert into innovations and actions necessary to contribute to impact. The **goal** of this project was stated as: livelihoods of the poor farmers in Eastern and Central Africa are **improved** through effective and integrated management of land and water resources for agricultural enterprises. As already stated above, increased utilization of the already existing knowledge and technologies – especially those found to work well in other areas, could be a faster way of contributing to this goal. The purpose of the project was driven by a realization that research results are not reaching the intended users, let alone being utilized. It was therefore considered that increasing the extent to which researchers themselves promote results from their research is critical to increasing utilization of these results. Furthermore, researchers are the group of a nations' human resource most able to undertake the prospecting for knowledge and technology called for by the Millennium Project (Box 1).

Therefore, the project focused on research managers as well as researchers themselves, with its **purpose** stated as: to **institutionalize** a culture of promoting uptake, scaling-up and effective use of results from soil and water management research in ECA (Box 1.2). To deliver this purpose the project was designed to produce three major outputs, with respect to increased understanding of major constraints and barriers, raised awareness of research managers, and improved capacity and skills of researchers. The target was to create a community of champions for scaling-up, uptake, and utilization of existing and future results and experiences from both research and development work on integrated management of land and water in the sub-region. However, as it will be shown in this report, the anchoring of this project within ASARECA as well as working with senior managers in the NARS, enabled the project to reach the entire agricultural sector in the region.

Box 1.2: Project Objectives

Goal: Livelihoods of the poor farmers in East and Central Africa **improved** through effective and integrated management of land and water resources for agricultural enterprises.

Purpose: A culture of promoting uptake, scaling-up and effective use of results from soil and water management research in East and Central Africa **institutionalized**.

Outputs:

i) Constraints and barriers limiting uptake promotion by research institutions and partners, **elaborated** and **understood**.
ii) Understanding by key research managers, of the importance of communication and uptake promotion strategies for impact of R4D in S&WM **increased** and **enhanced**
iii) Capacity for providing training and skills development in communication planning and uptake promotion, **developed** among the SWMnet stakeholders in ECA

1.3 Review of Literature

This section summarizes a more comprehensive review of literature which was produced at the beginning of the project and published as project communication product; namely SWMnet Discussion Paper 3 (See Annex C-1). The subject matter of this project is covered in the literature under several themes. These include literature on dissemination, diffusion, outreach, scaling-up and knowledge management, especially by commercial businesses (Box 1.3). Our review was limited to literature on knowledge management and scaling-up because these are all encompassing. We start with knowledge management and then briefly discuss literature on the concepts of scaling-up and uptake promotion.

1.3.1 Knowledge management

Knowledge management is crucial due to the proliferation of information, the demands for rapid assimilation of data, and the increased value placed on knowledge as an asset. In some ways, knowledge management is characterized by the desire to develop and apply knowledge from an abundance of data and information. Important concepts have been developed in the process, leading to a working definition of knowledge management as *a conscious strategy of getting the right knowledge to the right people at the right time in ways which improve utilization of what is already known*. The main aspects are an increased knowledge of what is known, sharing what is known among the key actors and improved learning. For business, *knowledge management, then, refers to a systemic and organizationally specified process for acquiring, organizing and communicating both tacit and explicit knowledge of employees so that other employees may make use of it to be more effective and productive in their work*[3].

Box 1.3: Knowledge as an Asset

The final project report of the Best eEurope Practices found that organizations especially large businesses are implementing Knowledge Management Systems (KMS) for two major objectives;

- to nurture the creation of new knowledge to speed up innovation for competitiveness, and
- to optimize the sharing of existing knowledge to increase efficiency by exploiting synergies and overcoming overlaps or "reinvention of the wheel"

Van Hof, C.T. (2003)

Knowledge management is complex and involves issues of organizational culture and values which, in many cases, have never been examined or articulated. The World Bank is one of the organizations that are supporting programmes to ensure that there is increased learning and utilization of existing knowledge. In its World Development Report of 1998, the Bank[4] defined knowledge management as follows:
*There is no agreed definition of **knowledge management**, even among practitioners. The term is used loosely to refer to a broad collection of organizational practices and approaches related to generating, capturing, and disseminating know-how and other content relevant to the organization's business. Some would argue that knowledge management is a contradiction in terms, being a hangover from an industrial era when control modes of thinking were dominant. Thus knowledge is not just an explicit tangible "thing", like information, but information combined with experience, context, interpretation and*

[3] see http://cais.isworld.org/articles/1-7/article.htm
[4] see www.**world**bank.org/wdr/wdr98/overview.pdf

reflection. Knowledge involves the full person, integrating the elements of both thinking and feeling. Hence some object to the implicit suggestion in the use of the term knowledge management that knowledge can be so managed, as revealing a fundamental misunderstanding of the nature of knowledge. Many practitioners increasingly see ***knowledge sharing*** *as a better description. Others would prefer to emphasize* ***learning****, since the real challenge in implementing knowledge management is less in the "sending" and more in the "receiving", particularly the processes of sense making, understanding, and being able to act upon the information available. Overall, whatever the term employed to describe it, knowledge management is a holistic way of understanding and exploiting the role of* ***knowledge*** *in the processes of managing and doing work, and an authentic guide for individuals and organizations in coping with the increasingly complex and shifting environment of the modern economy*.

The statement above says, whatever the term employed to describe it, knowledge management is an important strategy for development. In summary, knowledge management is the act of c*onnecting people to the best practices, knowledge, technologies and expertise they need to create value*. In this regard, knowledge management for integrated agricultural development in Sub-Saharan Africa should be about the systematic connection of stakeholders to best knowledge they need, by supporting:

- the creation or acquisition of knowledge relevant to opportunities and constraints,
- the synthesis and learning from such knowledge,
- the sharing, scaling-up and promotion of uptake through better communication and networking, and
- the utilization by the right people at the right time in the right place to generate innovations.

To achieve this, the InterAcademy Council (2004) report to the UN Secretary General on "Realizing the promise and potential of African agriculture" emphasizes the need for national agricultural innovation systems (NAIS). The report urges that this is necessary so as to ensure critical and balanced attention to the full chain from generation, diffusion to application of knowledge. In the next section we briefly discuss how the literature deals with the apparent failure to achieve this in SSA.

1.3.2 The gap between generation and utilization of knowledge

Rogers (1995) observed that the existing de-link between knowledge and action, is a result of researchers limiting the communication of research results to scientific fora such as journal publications and scientific conferences. This approach limit the extent to which most decision makers and key players in the impact pathways are reached by the research knowledge. Furthermore, M&E exercises often fail to link project success to development outcomes and impact. The German Agency for Technical Cooperation (GTZ), among others, has developed a conceptual framework for explaining the real and attribution gap which exists between research activities and utilization of research results (Figure 1.1). It is shown that most research and pilot development projects end up with limited impact because of limited efforts in the diffusion and application at higher levels (Douthwaite *et al.*, 2003 and Kuby, 1999). The challenge to bridging the gap will require a very strong in-built ability of projects to effectively link outputs to purpose and to take actions that improve the linkage of the purpose to the goal. This requires the engagement of a much broader set of actors beyond research, extension and project workers. The NRSP's CIM (DFID-NRSP, 2002) is about this engagement. Both the GTZ model and CIM are based on the fact that innovating is a process that occurs throughout the policy, institutional, economical and technology arena. Furthermore, the failure to link research results to factors beyond research and extension

spheres, is a major reason for limited uptake. Therefore, the diffusion (communication, sharing and scaling-up) process requires focus outside the limited range of farmers and extension service.

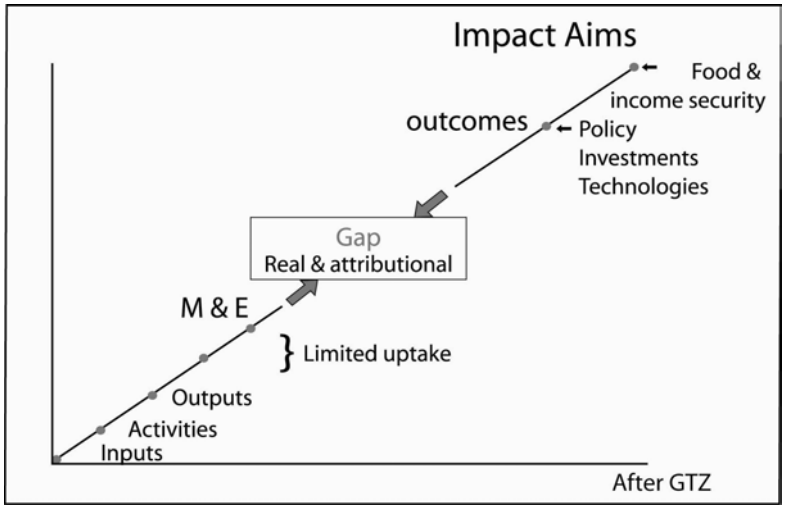


Figure 1.1: The impact gap as modified from a definition by GTZ (Kuby, 1999)

There are about nine aspects that the research systems must pay attention to in order to involve the wide spectrum of actors necessary to facilitate uptake and impact (Harrington *et al*., 2001). These aspects are:

i) Early identification of the uptake, utilization and impact pathways.
ii) Critical analysis of the decision makers and actors along the pathway to impact.
iii) Elaboration of indicators on the basis of robust base-lines.
iv) Sensible use of participatory approaches to ensure that all stakeholders obtain information about and influence the research process and outcomes to maintain relevance and acceptability.
v) Avoiding the artificial division between research (science) – driven and user driven strategies, by taking a balanced view.
vi) Promotion of networking for knowledge and information sharing, and negotiation among stakeholders,
vii) Responding to existing policy while informing policy change and institutional development,
viii) Remaining problem focused rather than organization focused – to ensure that effective partnerships necessary to deliver the results are formed.
ix) Making sensible use of information management tools, including models and geographic information systems (GIS), to achieve an effective linkage between knowledge and local action.

The above nine "principles" show a clear need for researchers to get out of the narrow boxes defined by their organizational affiliation and adopt a problem focussed approach that brings the necessary stakeholders together to act on research findings. Figure 1.2 show a hypothetical example of the stakeholders to be brought together for research involved in improving tillage tools. It is clear from this hypothetical model that if the pathway of "researcher – manufacturer – stockist – retailer - farmer" is overlooked, farmers will not use the implement no matter the amount of extension they receive. The implement will simply not be available.

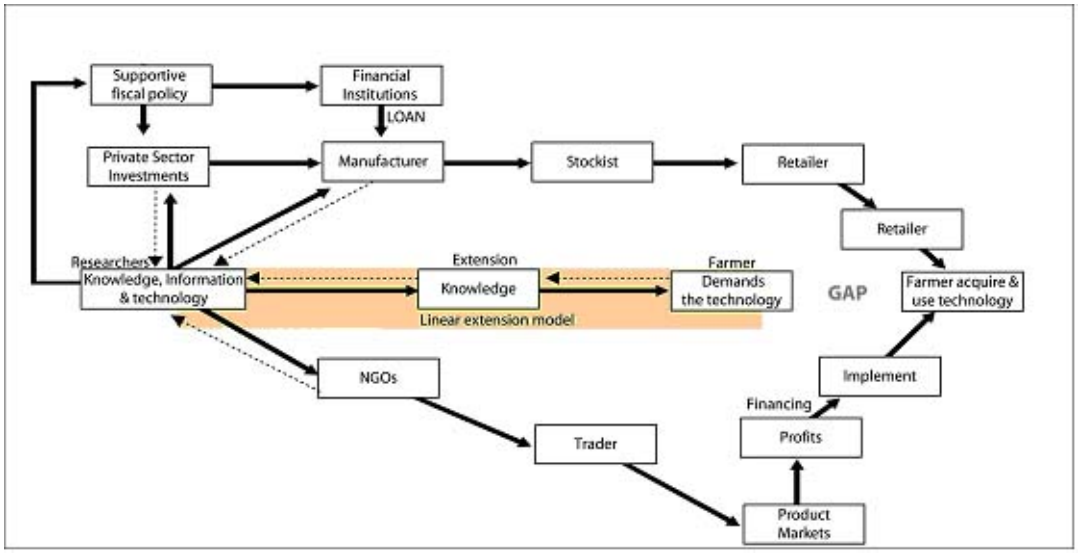


Figure 1.2: An example of critical actors required for an uptake of a technology

1.3.3 Scaling-up and uptake promotion

Institutional scaling-up is perhaps the most important and is a process of influencing higher and higher level institutions as shown schematically in Figure 1.3. Institutional scaling-up is based on the recognition that actions are required from many institutions for effective adoption by target beneficiaries of any particular knowledge or technology. Scaling-up is where efforts are made to communicate and share knowledge, especially the underlying principles with higher up institutions and bringing in other sectors including manufacturers, planners, policy makers and investors at community, local, national and global level. Uptake, acceptance and internalization at higher levels, increase the chance that these institutions will support and invest in horizontal spread (scaling-out). Scaling-up can also happen in a spatial dimension with respect to: (i) the expansion of the area covered by the project by spreading to more of the same categories of people or area; (ii) the linkages of impacts to downstream areas especially in connection to watersheds.

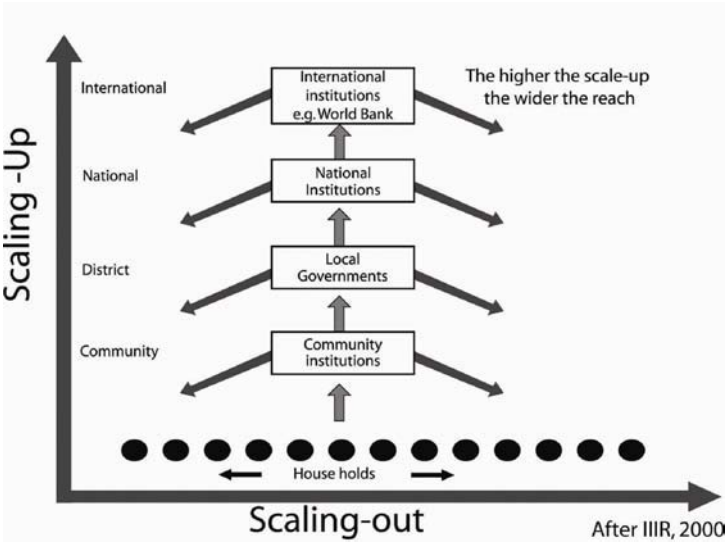


Figure 1.3: Institutional scaling-up as modified from IIRR, 2000

The debate on how to define scaling-up has not been concluded yet. However, in 2003 the World Bank released a well researched synthesis paper which looked at scaling-up from impact point of view (World Bank, 2003). Based on an intensive review of literature, the paper concluded that: *scaling-up is a process of efficiently increasing the socioeconomic impact of interventions*. The report elaborates that this is achieved through the replication, spread, or adaptation of techniques, ideas, approaches and concepts (*the means*) leading to an increased scale of impact (*the end*).

1.4 Outline of the rest of the report

The second chapter of this report describe the methodology used to produce the project outputs. It is divided into three sub-sections, one for each of the three outputs. Results and findings of the project are presented in chapter three which is also divided into three sections for each of the outputs. The last chapter 4 provides a synthesis of implication of the findings, by presenting discussions, conclusions and recommendations. The report is supported by the following Annexes:

i) Annex B1 which contains the four country reports on the appraisals of constraints and barriers to uptake promotion and scaling-up of research results in Ethiopia (B1.1), Kenya (B1.2); Sudan (B1.3) and Tanzania (B1.4). This annex provides detailed data and analysis upon which sections 2.1 and 3.1 of this Annex A are based.

ii) Annex B2 contains detailed reporting on the capacity building activities related to output 3. The annex is divided into 4 parts;
   - B2.1 is a training report for the SWMnet professional development course on preparation of proposals for R4D in S&WM,
   - B2.2 is a training manual produced for PDC/TOT on knowledge management and scaling-up,
   - B2.3 contains the training report for the PDC/TOT, and
   - B2.4 contains reports of the follow-up training done at country levels in Sudan and Tanzania.

iii) Annex C presents the latest versions of communication products produced by the project.

iv) There is no annex on inventory as R8381 did not procure any un-movable assets.

2 METHODOLOGY

2.1 Appraisal of Constraints and Barriers Limiting Uptake Promotion by Research Institutions and Partners

Appraisals were conducted in Ethiopia, Kenya, Sudan and Tanzania using a methodology designed at an Experts' Consultation workshop bringing together eight experts, two from each of the participating countries, and the project team of six. In total there were 14 participants of which five were women. The workshop used both plenary and group discussion sessions to establish eight main hypotheses to guide a rapid survey. The outcome of the workshop was produced as a communication product titled SWMnet Proceedings 2 (see Annex C-2). The hypotheses were:

Hypothesis 1: The role of research systems, institutions and researchers in uptake promotion is rarely recognized or promoted in policies and strategies that guide research in S&WM.

Hypothesis 2: The mind-set of most research planners, managers and researchers in S&WM are still fixated in the linear dissemination approach of reaching the ultimate beneficiaries through extension services.

Hypothesis 3: Research programmes and projects rarely include communication and uptake promotion plans.

Hypothesis 4: Research programmes and projects are rarely evaluated for communication, knowledge sharing, uptake and utilization of knowledge and technologies produced.

Hypothesis 5: A very small proportion of programmes and project budgets and activities are committed or used in the communication and uptake promotion of research results.

Hypothesis 6: Research outputs rarely include specific advice to farmers, input suppliers (e.g. fertilizer suppliers), extension service, policy makers and other clients.

Hypothesis 7: Researchers are not adequately trained for communication and uptake promotion.

Hypothesis 8: The reward and incentive systems like salaries, promotion and prizes to researchers do not insist on evidence of utilization and impact of research.

Both secondary and primary data were used in addressing these hypotheses. The sampling approach to obtain these data was different for each of the four countries but all followed a similar approach for each hypothesis (see country reports in Annex B-1). The methodology used to collect the data is described in the following sub-sections.

2.1.1 First hypothesis

Secondary data from documents on policies and strategies was synthesized to respond to the following questions:

- Do the policy and strategy documents identify the pathways to impact for research in soil and water management?
- Are the key stakeholders on the pathway to impact well articulated?
- What plan is articulated in the documents for ensuring attainment of impact from research?
- Is there any particular policy or strategic statement regarding uptake promotion and scaling-up and what is it?
- If any of the policies or strategies has ever been evaluated – what does the evaluation report say about attainment of impact and what reasons for failure/success are given?

The evaluated documents included the equivalents in each country for:

- Poverty Reduction Strategy,
- Agricultural Sector Development Strategy,
- Natural Resources Management and Conservation policies and strategies (e.g. land, water and the environment),
- National Science and Research Policy and Strategy, and
- Strategic plans of target research organization and universities in Ethiopia, Kenya, Sudan and Tanzania.

2.1.2 Second hypothesis

Two questions were formulated in testing the second hypothesis. These include:

- What are the existing modes and strategies of information sharing and promotion of the uptake of technologies?
- What are the attitudes of researchers and managers towards their role in this process?

Secondary data were obtained through reviewing policy and strategy documents so as to assess the mindset of planners and managers in soil and water management. Such documents included ministerial and institutional strategic plans and proposal writing guidelines. Further information such as university curricula was obtained from training institutions. Primary data was also used and was collected using semi-structured interviews with senior officers in the research, extension, and university faculties. The interviews aimed at finding out what they think are the roles of research systems in ensuring effective promotion, uptake and utilization of research results with specific focus on soil and water management. The specific data collection for each of the case study countries was as follows:

a) Ethiopia

Secondary data were obtained from research programs and projects. Primary data were sought by interviewing all the senior figures in research and a few from the Ministry of Agriculture and Rural Development, universities and colleges. It also covered researchers as well as extension experts in soil and water management.

b) Kenya

Secondary data were collected from national and institutional level documents. Ministerial documents mentioned in section 2.1.1 were analyzed at the policy level for information dissemination approaches. Primary data were collected using a semi-structured questionnaire which was administered to researchers in soil and water management to enlist information on dissemination approaches.

c) Sudan

The primary data were collected by interviewing planners at ministry level, the director general of ARTC and his deputies, and deans and directors of relevant faculties and institutes of national universities.

d) Tanzania

The primary data was collected by interviewing the directors of planning, research and development, postgraduate studies and deans of faculties. The survey also covered assistant directors for agriculture extension service and Tanzania Forestry Research Institute (TAFORI).

2.1.3 The third, fifth and sixth hypotheses

Due to similarities, a single process was used to collect data for these three hypotheses. To test the three hypotheses the following questions were to be responded to:

- Do approved research proposals have a specific section describing communication and uptake promotion plan – and how innovative is the plan or is it the usual workshop, reports and journal publications?
- If there is no specific section, is communication, dissemination and uptake promotion mentioned anywhere in the document – and are the target stakeholders specified?
- What plan is articulated in the documents for ensuring attainment of impact from the research programme or project?
- What does M&E and impact assessment reports of these programmes and projects say about attainment of impact and what reasons for failure/success are given?
- What roles do communication and information departments and experts play in projects – are they ever included as team members – or they just manage the library?

Necessary secondary data was obtained by reviewing a number of project documents to assess for the inclusion of communication and uptake promotion plans. These included project and program documents and reports, focusing on case studies of programmes and projects. Country-wise distribution of case studies was four in Sudan, two in Tanzania and six in Kenya. The relevant documents about the selected programmes and projects including proposal document, appraisal reports, proceedings of annual plans and review meetings, progress reports, technical reports, publications, other communication products and activities were reviewed.

Furthermore, M&E and impact assessment reports were obtained and synthesized to answer the research questions. Then an assessment of the communication and uptake promotion contents and budget allocation in the proposals, activities and final products was carried out for each project. This was followed by determination of the extent to which serious advice was extracted from the project technical reports and given to the relevant stakeholders for ensuring uptake and utilization of the research results.

Primary data were collected through a questionnaire administered to selected researchers and managers in the NARS. In **Ethiopia p**rimary data were gathered through PRA and by interviewing senior researchers and experts from the Ministry of Agriculture and Rural Development, universities and colleges. In **Kenya** secondary data were sought by reviewing and synthesising several documents from seven long term programmes and projects. In addition to secondary data a questionnaire was administered to researchers and managers to get an indication on the frequency of promotion and uptake plan in their research projects. In **Sudan** documents of four programmes and projects were synthesised. In **Tanzania s**econdary data were obtained by assessing two case studies. Also a survey was conducted to collect primary data from directors and assistant directors in ministries and universities.

2.1.4 The fourth hypothesis

The following questions were formulated with regards to this hypothesis:

- Are there adequate guidelines for monitoring and evaluating communication and uptake promotion?
- Even where adequate guidelines are provided – are they enforced?

Secondary data that were used included guidelines and operational procedures of the M&E units or departments where they exist; guidelines for M&E of soil and water management

research projects where they exist; actual M&E reports; and any other relevant documents. Primary data were collected through administration of a questionnaire to selected soil and water management researchers.

In **Ethiopia** documents of research activities that were carried out in the country over the last 10 years were collected and assessed. While in **Kenya** policy and strategy documents were analysed and evaluated for communication, and uptake of knowledge at ATIRI and Small-scale drip irrigation project. Questionnaires were administered to selected researchers to enlist their views in technology uptake. For **Sudan** data was again obtained from documents of the four long-term projects and programs described earlier. In **Tanzania** like in Kenya, various policy and strategy documents were reviewed for their content of communication and utilization of research products. Similarly a questionnaire was administered to researchers to determine if they include communication plans in their research projects and programmes.

2.1.5 Seventh and eighth hypotheses

Hypotheses 7 and 8 were geared towards assessing the following key questions:

- To what extent does the researcher have access to and use of higher level policy and strategy documents – and what does she/he think is the reason for not accessing and using these documents?
- How much of the information the researcher has collected say in the last five years is contained in technical reports produced during the same period?
- How much of the information and data contained in his/her technical reports or journal papers have been used to produce specific advice to farmers and other clients?
- What kinds of communication, knowledge sharing and uptake promotion products have been produced – and how innovative are they in targeting specific stakeholders?
- Has the effectiveness of the products ever been evaluated and what were the results?
- An estimate of his/her budget and time committed and used in communicating and promoting uptake of research results.
- Assessment of training and own capacity in communicating and promoting uptake of research results.
- The most critical barriers to undertaking pro-active role in communicating and promoting uptake and effective utilization of results from S&WM research.
- Suggested priority interventions to overcome the identified barriers.

Secondary data for testing the seventh hypothesis included documents on training curricula from universities with respect to research planning courses given to postgraduate students in programmes related to S&WM. Furthermore, short courses given to researchers for in-service professional development were used to assess to what extent communication and uptake promotion techniques are given emphasis. And finally to test the eighth hypothesis the team collected and assessed documents describing strategies of governments and organizations with respect to the rewarding of researchers in the NARS – to see to what extent there is impact orientation in the criteria.

Primary data mainly used to test these two hypotheses were collected using a semi-structured questionnaire administered to researchers in soil and water management. The country approaches were as follows:

a) Ethiopia
For Ethiopia mainly primary data were used to test the hypotheses. Researchers were assessed for their knowledge in communication plan and reward system through the use of a questionnaire.

b) Kenya
Secondary data were obtained from the curricula of two universities, Jomo Kenyatta and Nairobi. These data were analysed to gauge whether they were adequate to engage researchers in communication activities. The reward and motivation scheme in KARI was assessed to determine whether it provided enough incentives for uptake promotion and scaling-up.

c) Sudan
Secondary data were obtained by reviewing the documents of the four long-term projects and programs to assess for their communication, knowledge sharing and utilization of knowledge and technologies produced by research. Furthermore, the curricula of three departments of Gezira University were assessed for their content of communication and uptake promotion.

Primary data were sought by interviewing policy makers, senior officers and researchers dealing with soil and water management using a questionnaire. The sample included 52 researchers and 26 policy makers and research managers. From this survey, the constraints limiting uptake promotion by research institutions and individuals researchers was understood and elaborated.

d) Tanzania
The curricula of SUA were reviewed with regard to whether students in soil and water management were trained in communication and uptake promotion. Primary data with the stakeholders were obtained by administering two types of semi-structured questionnaires. One questionnaire was administered to researchers and another one to potential policy makers and research managers.

2.1.6 Data analysis and hypothesis testing
Data analysis approaches were basically of two types depending on the nature of the data collected. These are content analysis and descriptive analysis. Content analysis approach was used in analyzing the content of policy and strategy documents, project reports and university curricula. The major outputs of content analysis were key messages addressing the specific hypotheses. Descriptive analysis involved determination of frequencies, proportions, means, ranking/scores, numbers, percentages and graphics. Where the amount of quantitative data was statistically plausible the variations were tested for statistical significance. For example in the Tanzania case, data on time and budget allocated in various research activities were adequate, it was possible to undertake statistical test of significance of equality of mean using T-test.

2.2 Increasing the Awareness and Understanding by Key Research Managers and Planners

To delivery the second output of the project, implementation was guided by the project communication plan produced by an expert consultation workshop at regional level (see Annex C-2). This section describes the institutions targeted for awareness raising and the methods and tools used. Although not by design, ASARECA ended up to be the institution

that received most of the awareness raising attention. At national level the process targeted the NARS and extension system. However, although included in the CP, only a few ministers and directors of general planning in ministries responsible for agriculture, rural development, NRM, and research, were reached.

2.2.1 Regional (ASARECA) and international stakeholders

The aim was to influence decisions and planning at regional and international level. Awareness raising at international level was implemented by presenting a paper titled: *Scaling-up and Uptake Promotion of Research Findings on Natural Resources Management in Tanzania* (Lutkamu *et al.*, 2005) (see Annex C-3) at the East Africa Integrated River Basin Management Conference, attended by about 130 participants from all over the world. At regional level the aim was to increase the outreach to all the NARS which are members of ASARECA. This was achieved through three main means. First, products of the project especially the literature review (SWMnet Discussion Paper 3) were made available to the Executive Secretary (1), technical officers (3) and regional coordinators of networks (17). Second, the project prepared and made slide presentations (see Annex B-2.1) at ASARECA workshops and meetings. These included the strategy planning and priority setting workshops for NRM as well as the Competitive Grants Systems (CGS) planning meetings. Presentations were also made to workshops and meetings during the planning for the Sub-Saharan Africa Challenge Program (SSA-CP), and other programmes and projects. Third, the project organized consultations of experts in soil and water management in the sub-region. This also included presentation to the 22nd annual conference of the Soil Science Society of East Africa.

2.2.2 National agricultural research and extension system (NARES)

This group included:

i) National agricultural research organizations/institutes as the main focus category of stakeholders for this project and the aim was to initiate an increased demand and budgetary support for inclusion of communication and knowledge sharing plans in research projects.
ii) The project also targeted universities especially directorates of PG studies, and faculties & departments with PG programmes in S&WM or related subjects. This is also a key category of stakeholders due to their dual role as both researchers and trainers of future researchers. The aim of targeting this group is similar to that for the previous group, with an added need to influence changes in the training curricula as well as the regulations for PG research – to include more emphasis on communication and knowledge sharing.
iii) Public extension system responsible for S&WM was included so as to influence new thinking about the role of extension system beyond the research-extension-farmers linkages.

Most of these communication stakeholders were reached through the workshops organized at ASARECA level as explained above. However, several activities were also carried out at country levels. The main approaches used in the target countries included presentations at face2face meetings, mainly national workshops organized to review research and extension programmes.

2.2.3 Ministers and directors of general planning

Under this category the project targeted ministries and directorates responsible for agriculture, rural development, NRM, and research. The aim of communicating with this

category of stakeholders was to raise their awareness leading to support to the identified needs for policy frameworks which are supportive to scaling-up and uptake promotion of outputs from agricultural research and S&WM research in particular. The project made a poster presentation to a meeting of Ministers of Agriculture from the Common Market for Eastern and Southern Africa (COMESA). In the Sudan, meetings with several senior ministers were implemented as well as a major half day workshop for the Ministry of Agriculture in Khartoum. In all the four target countries face2face meetings were held with directors and assistant directors in several ministries and organizations.

2.3 Developing Capacity and Skills in Communication and Uptake Promotion

The literature review provided the initial ideas of the critical training needs of the target stakeholders. These ideas were presented and discussed by the expert consultations to agree on the training outline. Furthermore, feedbacks from the awareness raising activities described in the previous section were used to confirm these needs. The training and capacity building was done at three levels as described below.

2.3.1 Integration into regional training on research 4 development

The project developed a training module on knowledge management as part of a professional development on preparation of R4D projects in soil and water management. A report of the first implementation was published as SWMnet Training Report 1 and is presented in Annex B-2.1. The course has been adopted and used extensively in the training of researchers from all the countries that are members of ASARECA. In total the course materials has been used by nine short courses implemented by ASARECA, six of its networks, and two other organizations.

2.3.2 Regional level professional development and training of trainers

The aim of the professional development course was to build a culture of promoting uptake and scaling-up, by raising the capacity and to create a community of champions of knowledge management in the region. It was designed to respond to the findings of the assessment of constraints and barriers reported in chapter 3. The findings indicated that researchers in the region required skills and confidence with respect to:

- How to respond to, while influencing existing policies in relation to knowledge management, uptake promotion and scaling-up,
- Assessment of knowledge chains and critical analysis of actors along these chains,
- Developing knowledge management strategies for organizations and programmes as well as communication plans for projects, and
- How to select and use the most appropriate knowledge sharing means.

These needs were confirmed by stakeholders' meetings and workshops and a course with the following five modules was designed:

Module1: Policy and institutional arrangements for improved knowledge management,
Module 2: Different aspects of knowledge management and the science of scaling-up,
Module 3: Knowledge management strategies for organizations and projects,
Module 4: Integrating best practices with best available tools for effective uptake promotion and scaling-up, and
Module 5: Training others to champion knowledge management, sharing and scaling-up.

The project then developed and produced a training and reference manual which is presented in Annex B-2.2. The implementation in early July 2005 brought together 40 participants from

11 countries in Eastern, Central and Southern Africa. These are: Burundi, DR Congo, Ethiopia, Kenya, Lesotho, Malawi, Mozambique, Rwanda, Sudan, Tanzania, and Uganda. Participants were researchers, planners and managers in soil and water management from research and development.

The project compiled a manual and a number of relevant reference materials for the participants. These included all the products of the "Socio-Economic Methodologies Programme - Best Practice Guidelines" and the NRSP CIM digest.
Experiential, adult and participatory approach to learning was used and the participants were responsible for own learning. Lectures were designed to only facilitate the learning process. Therefore, each module was implemented through a lecture, working group discussions, and a seminar where each group reported back on three key points:

i) Reflection of what has been learned,
ii) An assessment of how the lessons relate with current and past experience of the group members, and
iii) Identification of what could be done differently as a result of lessons learned.

A comprehensive report of the whole process is presented in the SWMnet Training Report 2 presented in Annex B 2.3.

The training was put into immediate use during the group work and seminars as the groups worked on knowledge management strategies and plans for: 1) ASARECA, where the seminars included a review of the current design of the technology transfer project of ASARECA, and 2) communication and knowledge sharing plans for the following projects to be funded through SWMnet starting 2006:

i) Improved Management of Agricultural Water in Eastern and Southern Africa (IMAWESA) – a SWMnet project supported by IFAD through ASARECA and ICRISAT. The **purpose** of the US$ 1.8 million project is to enhance the developmental impact of public and private investments in smallholder agricultural water management. One of its four outputs is to promote knowledge management and sharing of experiences.

ii) Four projects funded through SWMnet and supported by the ASARECA CGS for about 400,000 Euros, each:
   - Managing Soil-water and Nutrients together in Response to Markets in Eastern and Central Africa,
   - Promoting Natural Resource Management through Effective Governance and Farmer-Market Linkages,
   - Making the Best of Climate: Adapting Agriculture to climate variability, and
   - Efficient Use of Crop Residues: Animal feed versus conservation agriculture.

2.3.3 Country level professional development

The regional level training has led to the development and implementation of country level training for Sudan and Tanzania. Initial plans have also been made in Rwanda and Uganda. In Tanzania, the training was organized by a sister project R8088B at Sokoine University of Agriculture in collaboration with the Ministry of Agriculture and Food Security. The training brought together 27 researchers from universities, agricultural research institutes and Tanzania Metrological Agency. In Sudan, the training brought together 39 participants in a course fully supported by the Agricultural Research and Technology Centre (ARTC). The reports produced are presented in Annex B 2.4.

3 RESULTS AND FINDINGS

3.1 Constraints and Barriers to Scaling-up and Uptake Promotion of Research Results

There is almost a universal agreement that very little of the research results are put to use. This chapter presents a discussion of what the researchers, research managers and other stakeholders consider as being the main reasons for this state of affairs.

3.1.1 The role of the research system in uptake promotion: *not recognized in policy and strategies*

Nearly all the reviewed documents show that existing policies, strategies and programmes of governments and organizations put a lot of emphasis on accelerating and increasing the extent of impact on poverty reduction. Box 3.1 cites examples from some of the reviewed documents. However, the analysis undertaken by this project revealed that the policy thrusts have not been turned into action mainly because of two barriers:

i) A general low accessibility of the various policy and strategy documents to managers and researchers. For instance, in Ethiopia 62% of those interviewed indicated that accessing the national policy and strategy documents is very difficult, and 10% had not seen any of the current policy documents on agriculture and research. In Kenya 32% of those interviewed said they have no access to national policy and strategy documents (Figure 3.1).

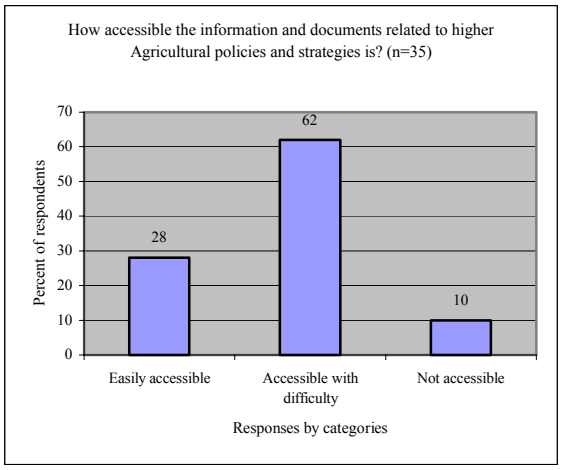
Box 3.1: Policy Examples from Case Studies

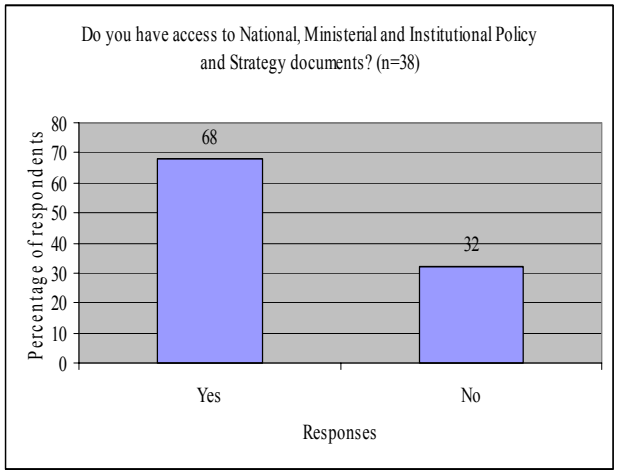
The National Strategy for Revitalization of Agriculture in **Kenya** (2004) identifies ***low absorption of modern technologies*** as one of the main constraints to agriculture growth in Kenya. It therefore calls for ***an agricultural innovation system that consistently provides appropriate technology, knowledge and information to the agricultural sector.***

The **Tanzanian** Medium Term Plan for agricultural research identified poor communication as one of the major problems in the uptake and utilization of research results. It underscores the need for promoting proven knowledge, information and technologies as one of the key strategies for improving food security and alleviating poverty (Government of Tanzania, 2003).

The policy of the Ministry of Science and Technology in **the Sudan** (2003) states that: ***building and strengthening a culture of dissemination science and technologies is a central pillar of the policy***.

In Ethiopia *Article 6 and Article 7* in the establishment of the **Ethiopian** Agricultural Research Organizations, call for ***a system which ensures that useful agricultural research results will be popularized and utilized by the end users***. Furthermore EARO is required to advertise agricultural research results in the languages of the different people using appropriate means in collaboration with relevant organs.





a) Ethiopia b) Kenya

Figure 3.1: Accessibility of documents of higher level agricultural policies and strategies

ii) Monitoring, evaluation and impact assessment are weak on tracing impact of investments in research. Often the reports repeat the usual suspect for poor uptake; mainly lack of affordable credit and the inadequate research-extension-farmer linkages. Very little efforts are made to undertake an in-depth analysis of the relationship between communication, sharing, scaling-up and extent of uptake and utilization.

Current research and development policies emphasize participatory approaches that ensure active involvement of farmers and extension officers in research, from problem identification, planning of on-farm trials, implementation, to monitoring and evaluation (M&E). This approach has, to some extent, improved ownership of the results and adoption of the developed technologies. Success story of farmers participation in research can be derived from Ethiopia where the results show the participation of farmers in different stages of technology development and transfer. In this respect, over 80% of interviewed researchers cited the participation of farmers at problem identification and implementation stages (Annex B-1.1, Section 3.2). Communication of research findings by training farmers and extension workers, demonstrations by farmers' groups, agricultural shows, exchange visits, production and distribution of leaflets are commonly used. Although extension officers and farmers are now involved in technology development, uptake is still low, mainly because other key players in the uptake and scaling-up process are not fully involved. In Sudan for example, one strategy of the Ministry of Science and Technology is that technologies that are technically sound, economically feasible and socially acceptable should be spread and adopted (Annex B1.3, Section 3.1). The main question is in the how and by what means this should be put to action?

3.1.2 A sharp division of labour between research and extension is a stumbling block

In most of the ECA countries there are distinct policy statements on the division of labour between the research and extension systems. For example, since 1995 the research system in Tanzania falls under the Ministry of Agriculture and Food Security while extension service is part of the Ministry of Regional Administration and Local Governments. This has sharpened the division and is hindering effective scaling-up of knowledge and technologies. There are extreme situations like in the Sudan where the evaluation of the regional project on supplementary irrigation under rainfed agriculture and water management at farm level, states that impact was limited by dissemination of the research results because of the absence of strong extension service (Annex B1.3, Section 3.3.2).

Another example of this problem was seen in Kenya, where KARI, after being criticized by an external review (Lundgren *et al*., 2003) for lack of impact of its research outputs, responded by initiating a programme known as Agricultural Technology Information and Response Initiative (ATIRI). The programme was designed to shift the focus of KARI from the "supply model" of disseminating research outputs to a "demand-driven model" where farmers are empowered to demand for desired technologies and information. However, this was met with hostility because it was considered that dissemination of research outputs is not the core responsibility of KARI but the mandate of the extension service of the Ministry of Agriculture (Annex B-1.2, Section 3.2).

3.1.3 Minds are set in the linear dissemination approach

As a consequence of the sharp division of labour described above, the dominant system for promoting research results is the uni-directional linear model of "research-extension-farmer linkages". Research findings are shared between researchers and extension workers during meetings such as of National Research Coordinating Committees followed by the extension delivering messages to farmers through systems such as training and visits (Annex B1.4, Section 3.2). Therefore, the researchers are often concerned in communicating only with the extension service, which is in turn only able to disseminate packages to farmers. This arrangement leaves out all the other agricultural sector stakeholders, certainly leading to the limited or non-adoption of research results. Even specific extension programmes still emphasize the old culture of a linear model. Such extension programmes are like NALEP[5] in both Kenya and Tanzania, and CORMA[6] in Tanzania (Annexes B1.2, Section 3.2 & B1.4, Section 3.3.2).

In general therefore, researchers are trained and are able only to communicate to fellow researchers or to extension workers. To this end, the most dominant means used to promote research outputs is either field days (for extension and farmers) and presentation and publication in proceedings of conferences, workshops and seminars, and in rare cases in local and international journals (for fellow researchers). Figure 3.2(a, b, c and d) show various communication means commonly used by researchers to promote research outputs in the case study countries. Figure 3.2 (a) indicates that, in Ethiopia workshops and field days are the most (71% of the time) used methods of communicating research outputs. The target for these communication methods is usually extension workers. On the other hand, television and radio are rarely (9% of the time) used as a means of communicating research outputs. Radio and TV communication is the main means of reaching a broader set of stakeholders.

The same trend is replicated in Kenya where publications, seminars and workshops, leaflets and newsletters combined were used 71% of the time (Figure 3.2 (c)). Once again, these means of communication are targeted at extension workers and other research scientists. Radio and TV account for less than 5% of the time. When Radio and TV are combined with field visits and agricultural shows, they account for about 25% of the time (Annex B-1.2, Section 3.2).

Similar trend is seen in Tanzania (Figure 3.2(d)), researchers used field visits to communicate research outputs 40% of the time. Field visits and demonstrations accounted for close to 50%

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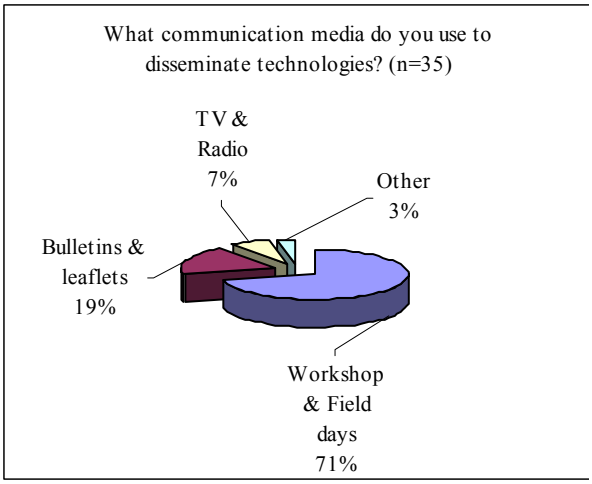
[5] National Agriculture and Livestock Extension Programme

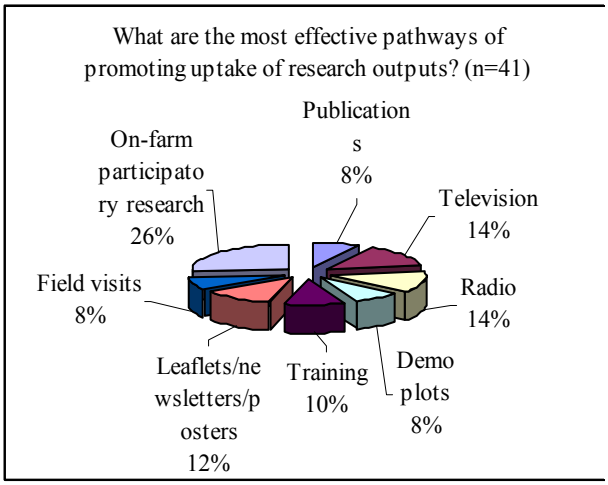
[6] Client-Oriented Research Management Approach

of the time. TV and radio communication was very low at 4% of the time. The situation is not different in the Sudan, as researchers used demonstrations, participatory methods in research, field visits and on-farm trials for 42% of the dissemination effort. However, the use of radio and TV was highest (28% of the time) in Sudan compared to the other study countries. No evidence was obtained to elaborate to what extent this use of radio and TV contributes to effective communication to the desired wider set of stakeholders beyond the extension and farmers.

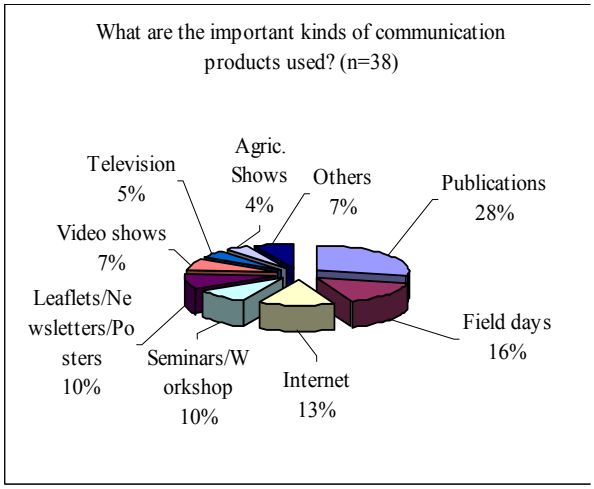
a) Ethiopia



b) Sudan



c) Kenya



d) Tanzania

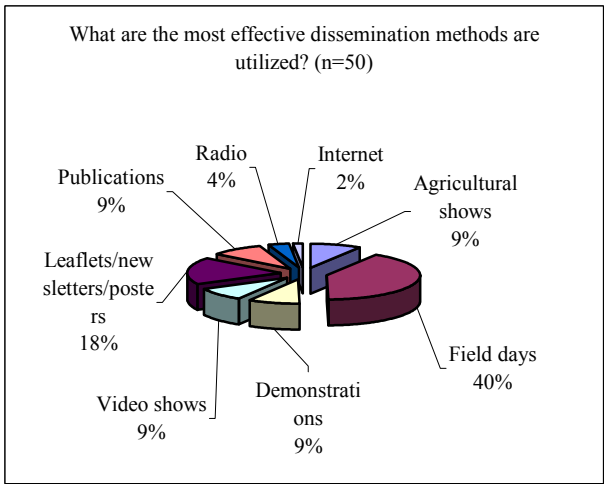
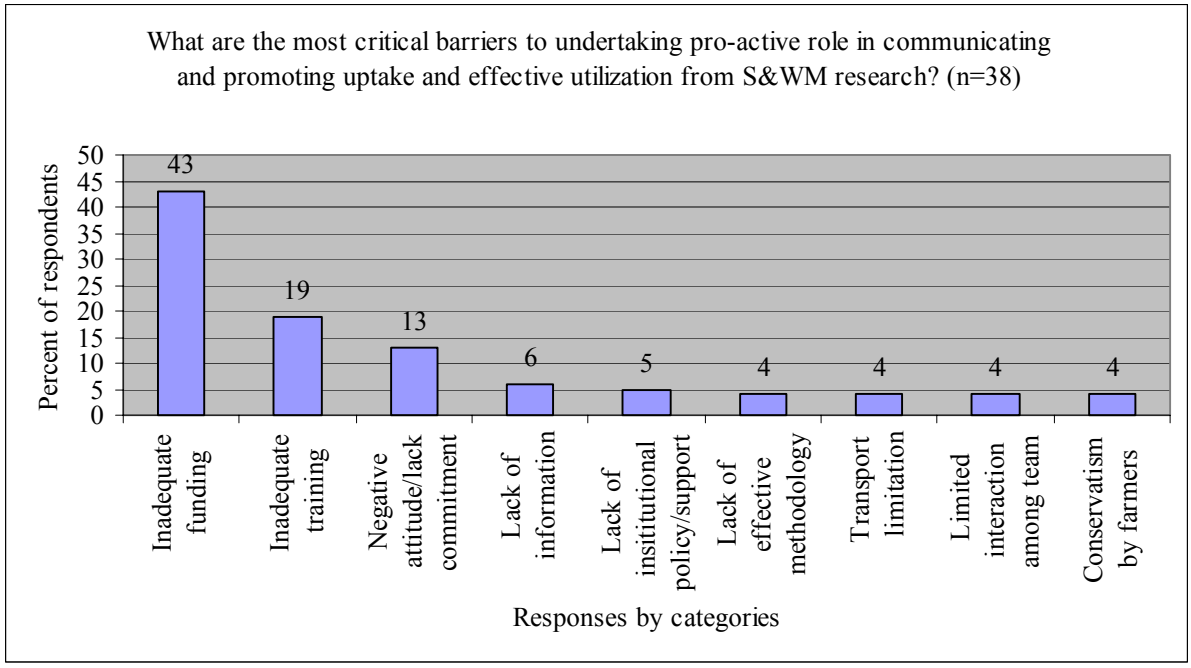


Figure 3.2: Communication means used by researchers in soil and water management in the four case study countries

Figure 3.3 indicates that barriers to effective communication of research outputs include inadequate funding, reported by 43% and 36% of the respondents in Kenya and Tanzania respectively. Lack of proper training in communication skills was mentioned the second most

important barrier to effective communication of research outputs in Kenya. In Tanzania, the second most important impediment to communication was considered to be lack of a transfer kits, whereas lack of skills was the third major barrier to effective communication.

a) Kenya



b) Tanzania

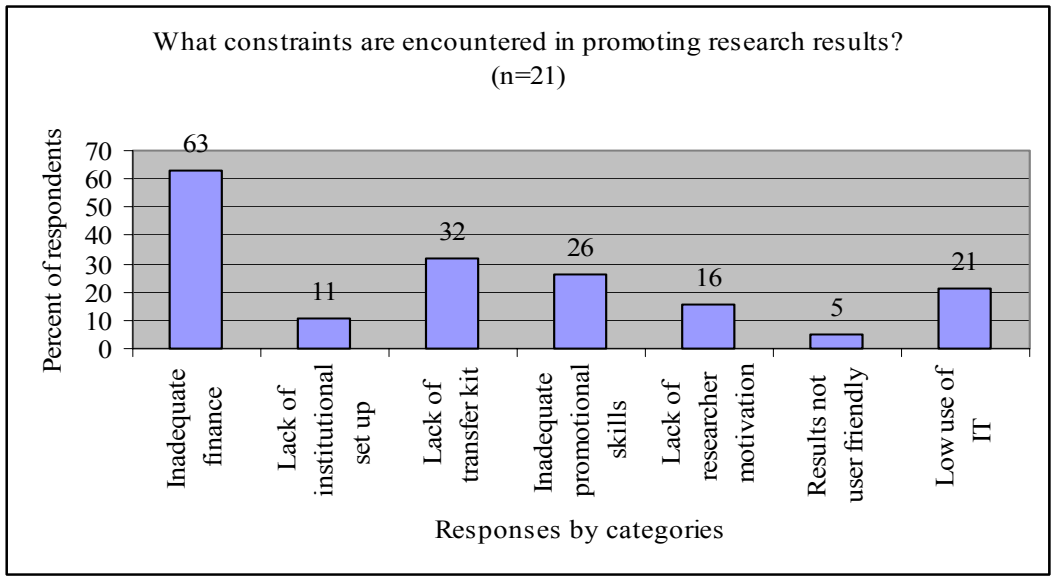


Figure 3.3: Most critical barriers to undertaking proactive role in communication

3.1.4 Inadequate plans for promotion and uptake in project proposals

Several projects and programmes in the ECA sub-region were evaluated and the results indicate that nearly all of them omitted communication and uptake promotion in their plan of activities. In particular very little budgets were allocated to these activities. The Kenya and Tanzania case studies revealed that most researchers consider inadequate funding to be the most critical barrier to communication and uptake promotion (43%, and 36% respectively) (Figure 3.3(a & b)). The situation was the same in Sudan where 66% of the researchers and managers interviewed during the appraisal, indicated that they rarely allocate or are allocated

any budget for communicating the results from research to target users (Figure 3.4). In the Ethiopia case, 76% of those interviewed (researchers and managers) reported that manpower and budget allocated to uptake promotion was always inadequate (Figure 3.5).

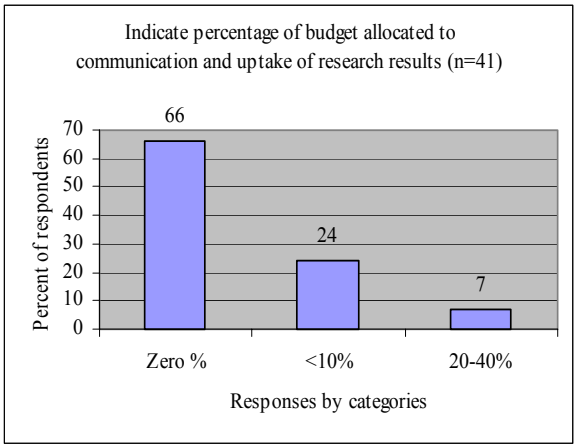


Figure 3.4: Budget as a major contributing factor for lack of communication plans, Sudan

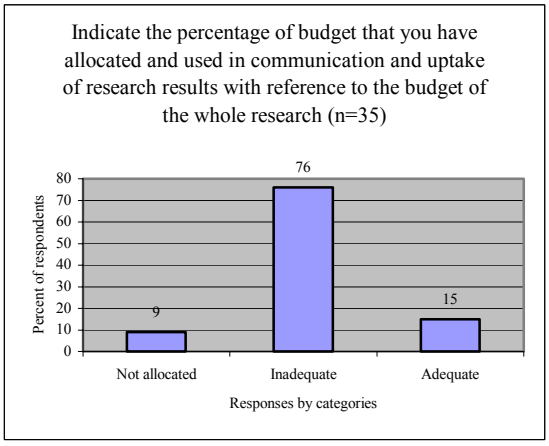


Figure 3.5: Manpower and Financial Resources allocated for communication and uptake promotion of research results, Ethiopia

3.1.5 Inadequate evaluation for uptake promotion and utilization of results

Analysis of research results showed that programmes and projects are rarely evaluated for communication, knowledge sharing, uptake and utilization of knowledge and technologies. As exemplified by the case in Ethiopia, the M&E units are normally internal and composed of fellow researchers. The terms of reference are often guided by the annual plan of the project being monitored. As it often the case that project annual plans do not include communication, uptake promotion and impact targets, therefore, an M&E guided by such a plan will have no basis for monitoring and evaluating these aspects. In all the target countries, the response was overwhelmingly negative with respondents from Ethiopia (81%), Kenya (82%) and Tanzania (73%) stating that research projects are never evaluated for uptake promotion and utilization (Figure 3.6).

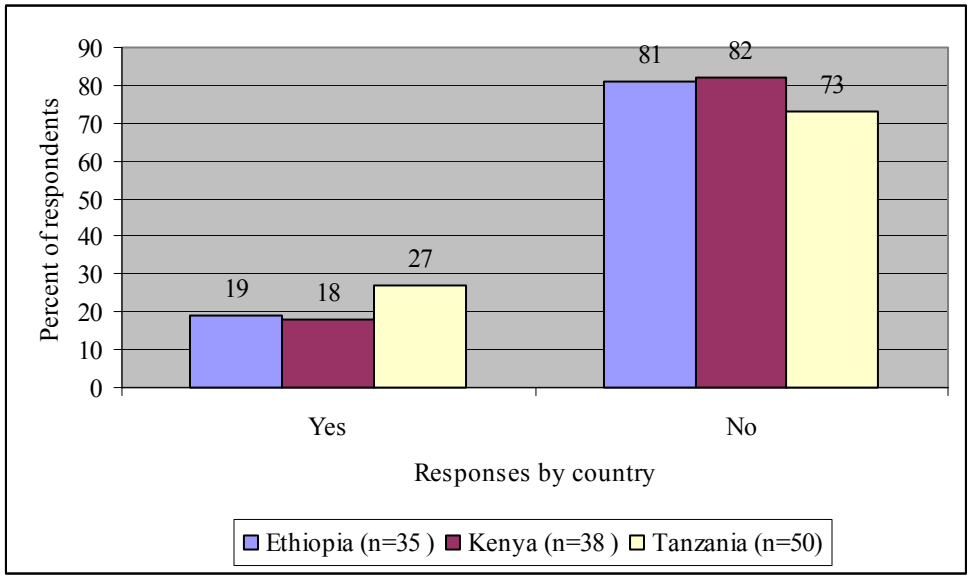


Figure 3.6: Evaluation for uptake promotion and utilization of results in three case study countries

3.1.6 Low budgets (time and funds) for communication and uptake promotion

In Sudan, only one project ─ the FAO fertilizer programme ─ out of four such projects, had a budgetary allocation for communication and uptake promotion. For another project, the Regional Network on Supplementary Irrigation Under Rain-fed Agriculture and Water Management at the Farm Level, the communication budget was only approved about three years after the commencement date and was thus not effectively used (See Annex B1.3, Section 3.3.1)

In Kenya, three long-term projects and two programmes focusing on land and water management were evaluated. These projects were distributed throughout the country and documents indicate that communication plans were not included in most projects and programmes. In rare instances the activity was included during the later stages of project implementation. Budgetary allocation, where communication plans were included, ranged from 3-24% of the total budget. It was shown that the actual budgetary allocation to communication-related activities was on average about USD 5,000 for five years (see Annex B1.2, Section 3.5).

Findings from Ethiopia show that there are no deliberately built-in communication plans in project proposals because it is perceived to be the responsibility of the extension department. This is reflected in the low manpower, inadequate budget and low time allocated for communication and uptake promotion of research results.

In the Tanzania case study it was possible to assess budget and time allocation to different stages of project implementation from field data collection to provision of advice to clients. The analysis provided a very a strong evidence that the fifth hypothesis holds true. It is unfortunate that this analysis could not be replicated in the other countries due to the nature of project reporting. Results are presented in Figure 3.7 and they indicate a high imbalance of the amount of time and funds allocated to different stages of the research to utilization chain.

The time allocated to fieldwork was significantly higher and more than double what was allocated for data analysis and report writing respectively. The researchers' time allocation to knowledge sharing was about 30% of what is allocated to field data collection. The final stage of giving targeted advice to clients is allocated only a minuscule 4% of the funds allocated to field work. These differences are highly significant ($p \leq 0.1\%$) (see Annex B1.4, Section 3.5 Table 14 for test statistics). Apparently, funds allocation to knowledge sharing though lower than that for fieldwork the difference is not significant ($P > 5\%$). This is explained by the pre-dominance of workshops and field days in the knowledge sharing process (see Figure 3.2) which require a lot of funds for transport and per-diems for participants, without increasing the time allocation by the researchers. As a consequence of the inadequate allocation of resources for uptake promotion, results from the semi-structured questionnaire surveys show that only a small proportion of the little information is actually put into use.

In Kenya, the survey results show that only 34% of the respondent researchers used all the information they gathered to produce specific recommendations to farmers while 47% used three quarters of the information generated for reporting (Figure 3.8). Similarly in Sudan, optimal utilization of information to produce specific advice to stakeholders was reported by

only about 24% of the respondents. About 54% of the respondents produced a few information that were used to advice the concerned stakeholders while 17% did not produce advice from their research information (Figure 3.9). In the Tanzania case, 32% of the interviewed researchers reported to have had used less information than what they generated from their research, to produce advice for clients. Almost similar proportion (36%) of respondents reported the level of information utilization to be medium, and only 27% reported to have highly used the information generated from their research for advice (Figure 3.10).

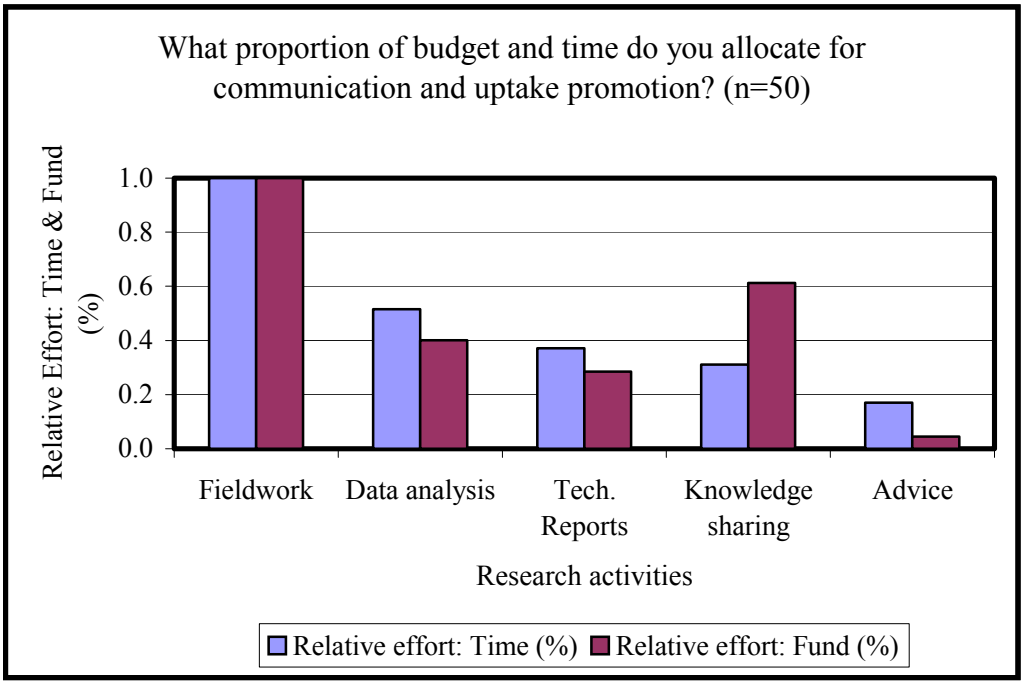


Figure 3.7: Average percentage allocation of Time and Funds for different stages along the research to utilization chain

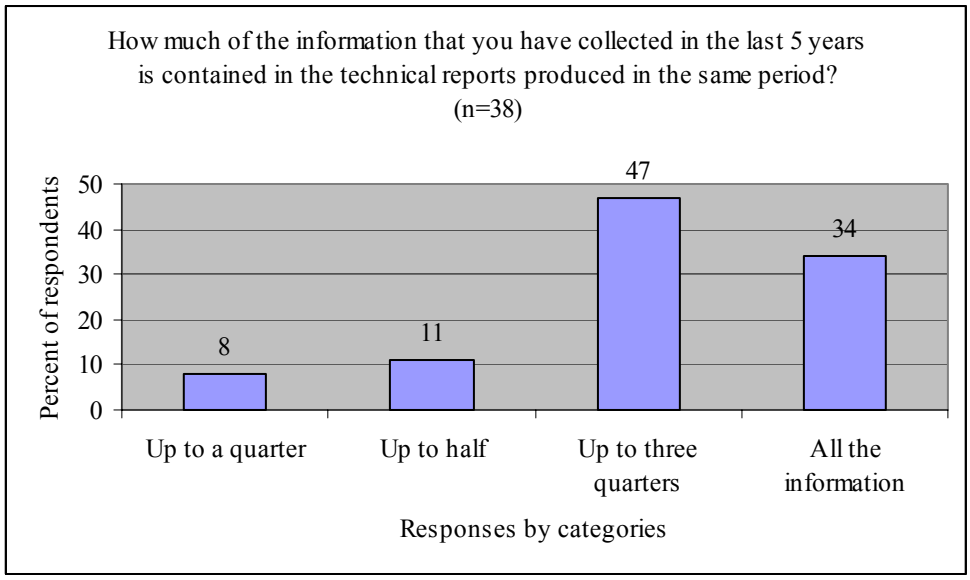


Figure 3.8: Usage of information gathered by researchers in soil and water management for reporting, Kenya

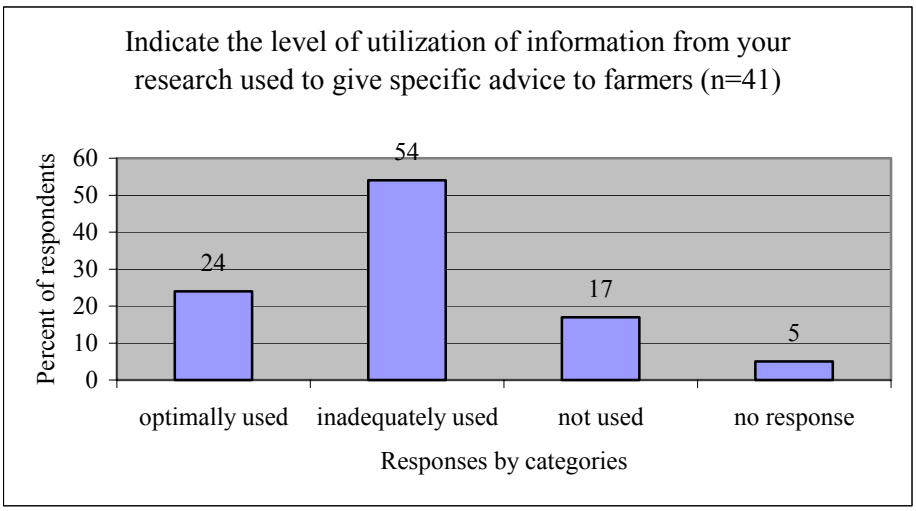


Figure 3.9: Usage of information gathered by researchers in soil and water management for reporting, Sudan

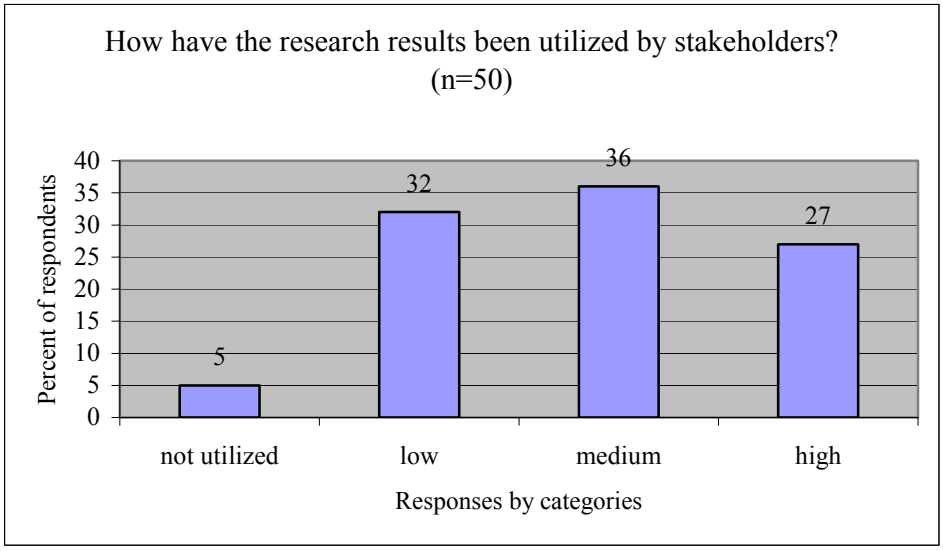


Figure 3.10: Usage of information gathered by researchers in soil and water management for reporting, Tanzania

3.1.7 Inadequate capacity of researchers in communication and uptake promotion

Findings from the rapid appraisal show that more than 50% of researchers have not been trained in communication and uptake promotion of research results (Figure 3.11). Reasons for poor promotion of uptake of research results vary between countries, but many respondents (researchers, planners and policy makers) blamed lack of training. In the Sudan for example, overwhelming majority (98%) indicated that they have never received such training. In Kenya, 71% of all interviewed researchers indicated that they have never been trained in communication skills for effective uptake promotion of research results. The situation was much better in Tanzania where interviewed researchers who indicated to have been trained on communication and uptake promotion were 45% and those who have not were 55%. In this respect there is improvement in training compared to other study countries.

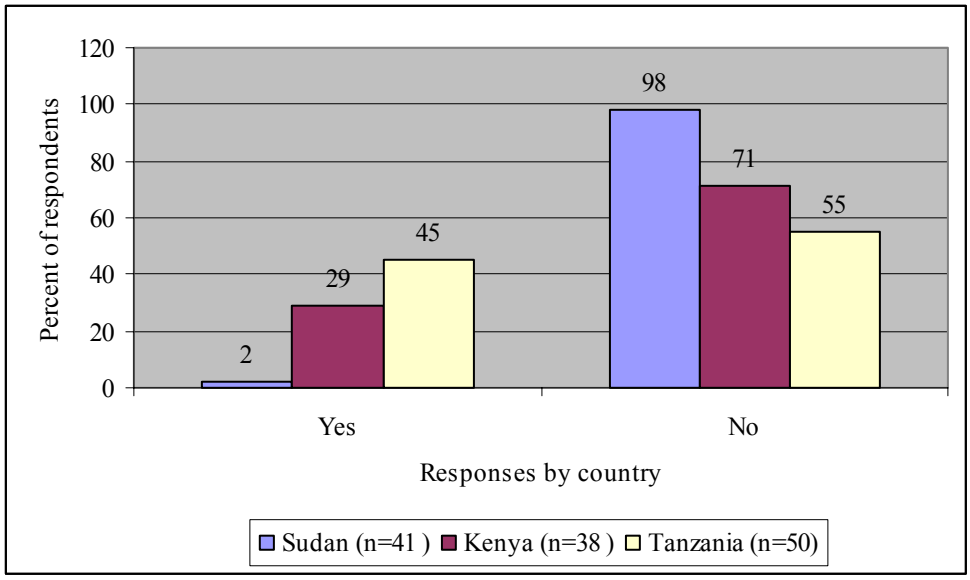


Figure 3.11: Extent of training of researchers in communication and knowledge sharing skills

Assessment of training curricular in the different countries revealed the source of this problem. A diagnosis of postgraduate courses offered at the state Universities in three countries, Kenya, Sudan, and Tanzania (Box 3.2) do not cater for communication and promotion of uptake of research findings in their teaching curriculum. Neither do they offer in-service training courses for the already employed, thus limiting training opportunities.

In Tanzania, a thorough review of postgraduate curricula for seven postgraduate programmes at SUA revealed that the aspect of uptake promotion is completely absent (Annex B1.4, Section 3.7). Much emphasis has been put on the formulation of research proposals, management of data, interpretation of research and organization and writing of research reports. Researchers are being trained on how to produce theses and journal papers which are not easily accessed to the majority of stakeholders.

In Sudan, a through review of university curricula of postgraduate studies showed that none of these courses cover the subject of communication, knowledge sharing, monitoring, evaluation and impact assessment of projects (Annex B1.3, Section 3.6).

These findings show that, the problem of poor capacity in communication and knowledge sharing may persist for a long period since the new crop of researchers is as un-prepared as the old. Tackling this problem should start by changing the current mind-set of research institutions and universities, who still subscribe to the linear dissemination model that expect researchers to generate results, and extension agents to transmit the findings to farmers.

Box 3.2: Communication and knowledge sharing missing in university curricula

a) Tanzania

In the curricular outline for seven MSc. and MA programmes offered at the SUA, aspects of communication and uptake promotion are completely absent. Much emphasis has bee put on proposal writing, data interpretation, thesis write-up.

b) Kenya

At Jomo Kenyatta University of Agriculture and Technology, Faculty of Agriculture offers MSc in Agricultural Engineering in 3 areas of specialization, i.e., Power and Machinery Engineering, Processing and Structures Engineering, Soil and Water Engineering. The course outline for Soil and Water Engineering has 5 core units and 11 elective units but none specifically on tools for communication and uptake promotion. The College of Agricultural Studies (University of Nairobi), Faculty of Agriculture, offers MSc. in Agricultural Engineering, MSc. in Land &Water Management, MSc. in Soil Science, and MSc. in Agricultural Resource Management. Communication and promotion of uptake of results are not specifically addressed but only inferred to through report writing, oral presentations, posters and thesis writing.

c) Sudan

The curricula offered to post graduate students in programs related to SW&M in 3 departments of the University of Gezira were reviewed. These are MSc. Soil Science, MSc. Agricultural Engineering and MSc. Water Management and Irrigation. The review showed that students are not trained on aspects of communication and promotion of uptake of research outputs from soil and water management research.

3.1.8 Reward and incentive systems for researchers: *not linked to impact*

The reward and motivation schemes for researchers have been analysed in different countries and researchers' salaries were found to be low (Box 3.3). They are also not rewarded for their outputs and the evaluation criteria are based on academic qualification and scientific publications in internationally referred journals and proceedings. Most institutions in the region consider the number of publications as the major criteria for promoting scientists.

Some institutions in the ECA sub-region grant an honorarium for researchers who produce a technology or release a variety that promote production in quantity and quality. This incentive, though small, was highly appreciated by researchers in the Sudan. In universities, incentives are still geared toward promotions based on publications alone.

Substantial improvements in salaries, linked to performance evaluation, are necessary. The hard criteria used in performance evaluation of agricultural researchers need to reflect the main objective of client-and development-oriented research, i.e. adoption and adaptation by farmers and other agro-entrepreneurs. Evaluation of researchers on the basis of actual adoption/adaptation by end-users might be difficult to implement since a multitude of 'external' factors (outside the control of individual researchers) affect adoption rates. Although scientists in universities in some countries are highly motivated; it is difficult to attribute their efforts to technology utilization and impact at people's level.

Box3.3: Poor Incentives and reward systems

a) Sudan

Researchers' motivation and reward system at the institution, local and national level is still poor, inconsistent and occasional. Criteria set for motivation varies from one institution to another and researchers are rarely motivated at regular intervals. Researchers always complain that salaries are low, fringe benefits are meagre, and their future it is uncertain. Recently, at the ministry level, the Minister of Science and Technology decided to grant an honorarium, for researchers who produce a technology or release a variety that promote production in quantity, quality or added value. This incentive though little was highly appreciated by researchers as means of motivation.

b) Kenya

In the past, researchers were not only paid low wages but there were no incentives awarded for ensuring that the results of their research are scaled-up. Over the past few years, the institute has made commendable strides to rectify the situation, by developing an evaluation criterion for promoting research scientist. Initially the criteria emphasized academic qualifications and scientific publications in referred journals and other scientific fora. During a subsequent evaluation, emphasis was shifted to include results and / or work done on-farm on a participatory manner, problem analysis and general involvement of stakeholders at the grass-root level. This system is still evolving and hopefully by the third evaluation, aspects of communication, knowledge sharing and uptake promotion will be included in the criteria.

c) Tanzania

The enabling environment for agricultural research in terms of scientists' salaries and incentives leaves much to be desired in Tanzania. Staff motivation can be enhanced through zonal empowerment, independent ZARF's research award, publication awards, study tour and sponsorship to scientific conferences. It is all useful but probably insufficient mechanisms to achieve the ultimate goal of client-oriented research and impact.

d) Ethiopia

No functional rewarding system was identified by the rapid appraisal.

3.2 Raised Awareness and Understanding by Key Research Managers in ECA

3.2.1 Extent of reach

The project reached most of the targeted research managers and researchers through regional organized meetings, workshops and other expert consultations. During 2004 and part of 2005 ASARECA was undertaking an exercise of strategic planning and priority setting. This provided the project with an opportunity to make presentations, raise awareness and change attitudes during the following workshops.

i) The ASARECA NRM experts' consultation workshop attended by 52 participants from international, regional and national organization.
ii) The ASARECA NRM stakeholders' workshop attended by 54 participants from research, development and extension organizations as well as NGOs. Again participants were from international, regional and national institutions.
iii) The strategic planning workshop of SWMnet which was attended by 52 stakeholders from research and development sub-sectors, representing international, regional and national organizations.

The main messages were based on the findings of the literature review, the NRSP-CIM as well as the findings of the appraisal of constraints and barriers as reported in section 3.1 above. The paper prepared by the Tanzania team and first presented at the East Africa Integrated River Basin Management conference, was a very important product for this exercise. Results included an increased understanding of the concepts of knowledge

management, scaling-up and uptake promotion. Furthermore, the existing barriers were discussed and suggestions made regarding potential actions to be taken.

Awareness raising activities in Kenya included:

- Face to face discussion with relevant directors and research managers at KARI.
- Presentation and discussion during a programme workshop of the National Agro-forestry Research Project, which was attended by 80 participants including researchers from KARI, KEFRI, ICRAF; Ministry of Agriculture extension staff and farmers.
- Presentation and discussions at the Review and Planning meeting of the Soil and Water Management programme, attended by 30 participants including researchers from KARI, extension staff from Ministry of Agriculture, farmers and NGOs.
- Key note address to the Planning workshop for National Agricultural Research System on 'Re-orienting the NARS from Supporting the Production of Commodities to Marketing of Products.

In the Sudan the awareness raising process went as high as ministerial level. Meetings were organized with: 1) Minister of Science and Technology; 2) Minister of Agriculture and Natural Resources; and 3) Minister of Irrigation and Water Resources. These meetings involved the ARTC leadership, the members of the project team and high-ranking officials of the respective ministries. The Ministry of Science and Technology is very critical as it oversees the ARTC, the National Research Center, the Atomic Energy Corporation, Energy Research Center, Animal Resources Research Corporation and the Industrial Research Center. The Ministry of Agriculture and Natural Resources administers the Technology Transfer and Extension programme of the country, national large irrigated schemes (from minor canals down to the field level), natural resources such as soil conservation administration, agricultural planning. Ministry of Irrigation and Water Resources has mandate on the Hydraulic Research Station, Water Resources Directorate and other administrations for the irrigated and rainfed sectors. It is responsible for the operation and maintenance of the higher irrigation system that includes the dams and the main irrigation canals as well as all the water resources in the country. These meetings were supplemented by a national seminar conducted at the Ministry of Agriculture with about 70 participants. At the level of directors, the project communicated its findings to the Director General of ARTC and his deputies for technology transfer. Deans and directors of colleges and institutes were also targeted by the communication activities. The project also used opportunities presented by the conference on desertification organized by the UNESCO chair on Desertification-Sudan, bringing together about 200 scientists, researchers and research managers. Special seminars were also organized as part of the ARTC's culture of organizing weekly seminars.

The Tanzania team focused more on the distribution of communication products of the project, with the project poster being distributed to all relevant organizations. The team also used face2face meetings to raise awareness and improve understanding of target stakeholders. These included two international conferences held in Tanzania, together attended by nearly 250 participants. One-day seminars were organized for researchers and managers of the Agricultural Research Institutes. More than 20 communication stakeholders were reached.

In general the awareness raising process of the project was extensive and targeted at the right stakeholders at the right time, that is, when these stakeholders were involved in the formulation of strategies to direct agricultural research for development in the next 5 – 10 years. It is estimated that between 700 - 800 stakeholders were reached by the awareness raising efforts.

3.2.2 Outcomes

Despite the short period, the awareness raising activities have started to show some effect at both regional and national levels. This section presents examples of institutional actions to which the awareness raising by project would have contributed:

a) Three major actions have been initiated with international implications for knowledge management. These are:
   i) The collaboration between ASARECA, the Indian Council of Agricultural Research (ICAR), International Research Institute for the Semi-Arid Tropics (ICRISAT) and International Water Management Institute (IWMI) to transfer lessons from India to Africa on integrated management of watersheds (see Appendix I and poster in Annex C-3).
   ii) A SWMnet project supported by IFAD with the purpose to enhance the development impact of public and private investments in smallholder agricultural water management. This will be realized through four specific results: 1) improved policy and strategic framework for management of agricultural water in selected countries of the region; 2) enhanced understanding among development partners of key issues (technical, economic, social and environmental), to guide future interventions and investments in management of agricultural water in the region; 3) improved effectiveness in the management and implementation of projects and programmes supporting smallholders management of agricultural water; and 4) **enhanced sharing of knowledge and best practices in the management of agricultural water within and across the region**. The fourth result will be building on the findings and tools developed by R8381. The LogFrame of this project is attached in Appendix II.
   iii) A coordinated action project proposal to INCO-DEV, bringing together ASARECA and European partners in a consortium designed to leverage more benefits from existing global databases in soil and water management (see Appendix III for summary).

b) At ASARECA level, there is evidence that decisions have been taken to give priority to communication uptake promotion, scaling-up and knowledge management in general. These are:
   i) Knowledge and technology uptake and scaling-up is being given high priority in the emerging strategy of ASARECA. The current draft states that ASARECA work will focus on three main themes: 1) applied social sciences in agricultural research, 2) integrated and participatory approaches in NRM, and 3) uptake promotion and scaling-up. To this end ASARECA will soon commission a consultancy to develop its "communication and knowledge management strategy" as elaborated in the ToR attached in Appendix IV.
   ii) Knowledge management is a key component of the approved sector strategies for NRM and soil & water management (see Appendix V).
   iii) Communication plan is given a high priority as criteria in the appraisals of research projects being funded under the ASARECA Competitive Grants System (CGS). As shown in Appendix VI, the two Calls issued by ASARECA have specified that "***The concept note should describe strategies for communication, up-scaling, M&E and assessing of impact of the expected results. This strategy should include a comprehensive identification of stakeholders to be targeted and appropriate indicators and milestones***" (see Appendix VI and www.asareca.org/cgs).

c) At country levels there is evidence that institutions in all four target countries have started to consider the inclusion of communication and uptake promotion plans in the design of new research projects at national or institutional levels.
   i) In Tanzania for example, the following have been recommended and are under consideration:
      - That the Agricultural Sector Support Programme (ASSP) of the Ministry of Agriculture and Food Security (MAFS) should initiate actions to institutionalise Communication and Knowledge Management Strategies for all stakeholders. This will include capacity development, improved linkages between researchers and clients, sensitization workshops for research and extension managers, and ensuring that individual research projects include and implement communication and knowledge sharing plans.
      - That the Sokoine University of Agriculture should develop policy guidelines to ensure that research projects as well as postgraduate research proposals contain plans and budgets for communication and knowledge sharing. This action can easily be part of the Programme for Agricultural and Natural Resources Transformation for Improved Livelihoods (PANTIL) which is designed to ensure increased developmental impact from research conducted at the university (Annex B2.4, Section 3.4.4).

   ii) In Ethiopia, the Ethiopian Agricultural Research Organization has resolved that all new research projects should contain robust communication and uptake promotion plans.
   iii) In Kenya, the Kenya Agricultural Productivity Programme, is initiating a national agricultural innovation system and discussions have been initiated to ensure that the projects it supports contain robust communication and uptake promotion.

   iv) In the Sudan initial steps have been taken by the relevant ministries and the ARTC towards including communication and uptake promotion plans in new research projects. The Gezira Agricultural University is also keen to improve courses given to graduate students on research planning to include a strong emphasis on communication planning.

3.3 Built Capacity and Community of Champions

During the period of implementation of project R8381, SWMnet has designed and implemented three different courses for professional development and training of trainers in subjects related to soil and water management. These are:

i) SWMnet professional development course on preparation and implementation of projects on research 4 development. This was funded by SWMnet core budget but one module was developed under R8381 using NRSP materials with respect to the development of communication plans. Details of the course are provided in SWMnet Training Report 1 presented in Annex B-2.1. This course, especially the module on communication planning has been widely adopted by other networks of ASARECA as discussed in section 3.2.1 below.

ii) SWMnet professional development and training of trainers' course designed under R8381 and implemented at regional and national levels as presented in SWMnet Training Report 2 and briefly described in sections 3.3.2 and 3.3.3 below. The course was designed to deliver output 3 of R8381, that is, capacity for providing training and skills development

in communication planning and uptake promotion, **developed** among the SWMnet stakeholders in ECA.

iii) Regional Training of Trainers in Integrated Land and Water Resources Management, implemented together with the UNESCO Chair in Water Resources (UNESCO-CWR) of the Omdurman University in Sudan and the UN international network for capacity building (CAP-NET). The module on knowledge management and scaling-up developed for the first course was used also in this course. A SWMnet Training Report 3 has been produced but is not presented in this FTR.

3.3.1 Capacity to design communication and knowledge sharing plans

The purpose of this course was to develop and strengthen the capacity of middle level researchers and managers to design and write demand-led research for development projects in soil and water management. The course was attended by a total of 25 participants drawn strictly from national agricultural research stations of the member countries of ASARECA. These included a professor (1), senior researchers with PhD (9), researchers with MSc (13), and 1 BSc holder. The contents were judicially designed to increase capacity to develop research projects which produce results that enable farmers and other agro-entrepreneurs to respond effectively to the available and emerging opportunities while utilizing land and water resources in a sustainable manner. In order to achieve this, the training course included the following four modules:

- **Identification of researchable issues -** with respect to peoples' development objectives, opportunities available to the them, potential in the soil and water resources accessible to the people, and obstacles preventing them from using the existing potentials to respond adequately to opportunities.
- **Communication and knowledge sharing** as a key component of research projects so as to ensure adequate uptake and scaling-up of research results. The course explored the role of researchers in the scaling-up and promoting the use of results from own research, as well as their role in knowledge prospecting and brokering.
- Integration of above issues into proposal writing.
- Approaches for preparing and conducting capacity building and training.

The evaluation and feedback show that the training course was quite successful in the delivery of the expected outputs and the achievement of the set purpose. The second module has been copied and used in the following training by other entities of ASARECA.

i) Project leaders of projects to be funded by the ASARECA CGS, bringing together 60 senior researchers from the whole region and agricultural sector.
ii) Researchers who are members of the East and Central Africa Research network for Sorghums and Millets (ECARSAM) – a course attended by 25 participants from eight countries.
iii) Members of the Animal Agricultural Research network (AAARnet) of ASARECA, through a training workshop attended by 24 participants.
iv) The Trees on Farm Research network of (TOFnet) in collaboration with the Coffee Research Network have used the module in two occasions, reaching about 70 scientists.
v) Researchers who are members of the East and Central Africa Research network for Maize and Wheat (ECAMAW) – a course attended by 35 participants from eight countries.

Therefore, the SWMnet module on communication and knowledge sharing has reached nearly 250 researchers in the region. This has tremendously increased the capacity for preparing and implementing communication planning and uptake promotion in the sub-region. The effect is already been seen in the proposal documents of new projects.

Furthermore, the researchers have started advocacy in their institutions towards the development of communication, uptake promotion or knowledge management strategies for projects, programmes and institutions.

3.3.2 Capacity to train others

Under output 3, the project developed and implemented a comprehensive Training of Trainers (ToT) package including training materials (see Annex B2.2 and 2.3). The course was attended by 38 participants including research planners, managers and implementers. The training was designed to equip the participants with skills and confidence to:

- Respond to, while influencing existing policies in relation to knowledge management;
- Assess knowledge products chain and articulate the role of research systems;
- Develop knowledge management and sharing strategies for organizations, programmes and projects;
- Select and use the most appropriate knowledge sharing means; and
- Develop and implement similar courses for others.

Participants invested the highest proportion of time in working groups and feedback seminars. They developed recommendations of how to mainstream knowledge management and scale-up research findings in the region. Details of the main outputs from these exercises are reported in Appendix II of Annex B2.3. At the end the participants were given a chance to evaluate the training, in which they indicated that the training was either Excellent (42%) or Very Good (50%). They also expressed satisfaction that training met their expectations excellently (39%) and very good (47%).

3.3.3 Training at country level

The ToT has been copied, modified and used for national level training in Sudan and Tanzania as reported in Appendices III and IV in Annex B2.4. The training in the Sudan was attended by 39 participants, who at the end of the training recommended that this activity should continue and be modified to cover wider range of scientists from other related disciplines. The Director General who opened and closed the training directed that this course should be prepared to address all the scientists in ARTC and not only those in soil and water management. The Deputy Director for research programmes is planning a special seminar on intellectual property rights. The participants indicated that they learnt more than they expected from the group work.

The training in Tanzania brought together 27 participants from Sokoine University of Agriculture (SUA); Ministry of Agriculture and Food Security (MAFS); the Agricultural Research Institutes (ARIs) of Tumbi, Mlingano, Mikocheni, Uyole, Seliani, Ukiriguru, and Ilonga; and the Tanzania Meteorological Agency. The participants developed specific actions that they would recommend to their organizations. The group discussions and outputs show that the training created champions of enhanced uptake promotion among the participants. At the policy level, the participants have started to create awareness and influence policy on issues to do with knowledge management and scaling-up (See Appendix IX).

3.4 Communication Products

The project produced fewer products than anticipated in the communication plan but these are very effective in supporting the awareness raising process described in the previous sections. The most widely used paper products were grey literature published by SWMnet and circulated widely. These are.

i) SWMnet Proceedings and discussion paper (Annexes C-1 & C-2)
ii) Three posters, used in promoting the research itself as well as the findings and recommendations.
   - The first poster was produced to advertise the project in English, Arabic and Kiswahili. It was designed to target nearly all the communication stakeholders of the project (Annex C-4.1-3)
   - The second poster was produced to present project findings on the gap that exist between knowledge generation and impact and the benefits that can be obtained if that gap is removed. It mainly targeted researchers and extension managers and staff (Annex C-4.4).
   - The third poster was produced to present the SWMnet led action of leveraging more benefits for Africa from Indian experience in watershed management (Annex C-4.5)

Media products produced included:

i) Power Point Slides Presentation used for the face2face meetings, seminars and workshops.
ii) An awareness raising film on DVD and video for extensive media use.
iii) Furthermore, the project documents and reference materials, project reports and products will be compiled in a well designed CD with linkages. This will be produced for wide distribution and posting on the web by December 2005.

The following products have been designed but are yet to be produced:

- A policy brief for policy makers. It will cover recommendations on how to remove major impediments to scaling-up and uptake promotion.
- The two drafts of Training Manuals will be edited and produced as reference materials in SWMnet institutional series.
- The drafts of Training Reports will also be produced as communication products for raising awareness.
- The three published postes will be re-produced in French versions
- The findings on constraints and barriers (sections 2.1 and 3.1 in Annex A) will be published as a technical pamphlet (SWMnet Discussion Paper 4).

Advanced drafts of these products are already at hand and all except the policy brief are actually presented in this FTR. As it can be seen all are already laid out in the format of SWMnet internal publications and therefore they should be published in the first quarter of 2006. The target is to distribute these products during the Annual Meeting of ASARECA planned for end of January 2006. This meeting brings together all the research directors and several deans of faculties from the ten countries that are members of ASARECA.

4 DISCUSSION AND RECOMMENDATIONS

4.1 Discussion of Lessons and Findings

4.1.1 Major constraints and barriers limiting uptake promotion, scaling-up and utilization

The findings of the appraisal show that there are many barriers to uptake promotion and scaling-up of knowledge but policy is not one of them. Most of the national policies evaluated, although not perfect, create a conducive environment for robust plans for promoting uptake, scaling-up and general management of knowledge for agriculture, NRM and S&WM in the sub-region. However, it is clear that mere existence of policy statements is not adequate. These policies must be turned into action by relevant institutions and organizations. This is where the most critical barriers exist, namely the entrenched institutional processes and attitudes, especially the artificial division of labor between research and extension. It is clear that this state of affairs is not a policy position but rather a reflection of institution inertia caused by inadequate understanding of global, regional and national policies. Therefore, the most viable solution to this problem is to build capacity of managers and researchers in relevant organizations to respond to, while influencing existing policies in relation to knowledge management uptake promotion and scaling-up. The remarkable plans and actions within ASARECA show that this is quite possible. It is recognized that the success within ASARECA is a result of the flexible nature of the organization which has the minimum of bureaucracy. Certainly it will take a little longer to achieve similar change of attitudes and practices in national organizations.

Let us turn to the issue of fixed mind-sets on the role of researchers in uptake promotion and scaling-up versus the extension service. The limited findings of this project show that the horizon of most research organizations is still very narrow, namely generation of technologies. However, according to the findings of the Millennium Project Task Force on Science, Technology and Innovation (2005), what is required is the application of knowledge for development. At the moment there is little understanding of implications of this new outlook on the role of national agricultural research organizations. The conceptual model presented in Figure 1.2 explains what it means to apply knowledge to development. The challenge is how to synthesize research results so as to inform different actors differently on the same issue so that they can take the necessary decisions and actions to ensure that each sector support the adoption and utilization of the results. These actors will include policy makers at different scales, agro-entrepreneurs, extension service, farmers, and business entrepreneurs involved with input and output markets. To reach all these actors requires a completely different outlook since it means communicating research results to clients outside the traditional set of extension and farmers.

The second issue that requires change of mind-set from the current position, that the job of the research system is to generate technologies, is the realization that knowledge prospecting and brokering is a much quicker way to facilitate innovations in Africa, rather than entirely new research. However, prospecting and brokering requires the same level of skills as those required to generate new knowledge. Therefore, national agricultural research experts are the best placed group of people to implement serious prospecting for their country. Their mandate must therefore be changed to a focus on timely provision of knowledge and information appropriate to the client's needs, and integrated NARS which can balance

between client needs and ecological soundness. The research systems should realize that although they are key players, they are just one of a multitude of players in a national innovation system with a lot of collaborators, which requires good connection and networking.

The third most important barrier is the little ability to monitor and attribute impact to particular research efforts so that researchers can be remunerated in relation to uptake and effective scaling-up of their research results. More work need to be done to develop robust tools for assessing and attributing impact before sensitive incentives such as promotion and salary increments can be linked to successes in utilization of research results. However, it is important to emphasize that researchers can not continue with the current business model where a lot of money is spent on research and yet the situation of smallholder farmers is deteriorating instead of improving.

4.1.2 Understanding by key research managers and planners

As discussed in section 4.1.1 there is still some way to go in the advocacy task of changing mind-sets. However, the achievements of this project especially with regional networks related to ASARECA show that this task can be done. More investigative work is required to produce more robust evidence to convince the decision makers and managers of research systems that investment in knowledge management will pay better dividends than on entirely new research. For example, there is scope for more in depth study of the findings reported in section 3.1.6 on the current allocation of research funds and staff time to the different stages on the knowledge chain. This kind of evidence is necessary for strengthening the advocacy work that has already started. It is expected that the follow-up projects which have been initiated by SWMnet will assist to elevate communication, knowledge sharing, uptake promotion and scaling-up to higher priority position in the countries that are members of ASARECA.

However, given the importance of bringing all stakeholders to the same understanding, effective management of knowledge from agricultural research will only happen if all sector stakeholders are pushing for it. Therefore, although this project was concerned with research system and research managers, we will venture to suggest that advocacy and awareness raising should be extended to all stakeholders of the sector so as to arrive at a common vision, mission and strategic objectives of national agricultural innovation system so as to bind each and every participant. For this reason establishment of regional, national and organizational knowledge management strategies should be given priority. This is very important since for a successful innovation system the economic aspect must be brought to bear. This requires a strong involvement of the enterprise sector. This means a replication of what the farming systems, participatory and farmer field schools have achieved with farmers, to the other key players of the agro-enterprises. The main issue that requires more investigation and attention is how to reconcile the needs for public good research to support smallholders with the business competition inherent in the private sector, and issues of intellectual property rights. Therefore, priority attention should be directed to strategy for exploiting synergies and complementarities among the stakeholders. For this to happen deliberate efforts should be made to create fora where all stakeholders such as smallholder farmers, commercial farmers, processors, business in inputs and output marketing , researchers and extension service and other service providers can negotiate collaboration in the innovation system.

4.1.3 Increased capacity

The project has helped SWMnet to develop two highly demanded capacity building and professional development programmes for the region. The main lessons include the

realization that increasing the knowledge of researchers and research managers on the current state of policies with respect to supportive framework for knowledge management is an important capacity building exercise. Every organization needs to assess its policies, and address those that do not support knowledge management and scaling up. The second aspect that was found very useful by the participants is training in capacity to develop and establish knowledge management and sharing strategies and plans at national, organizational and project levels. Materials developed by various NRSP projects, especially the socio-economic methodologies programme would be an important input to this undertaking.
To build long term change in the capacity a two prong approach is required. One is to continue and expand the current professional development so as to build the capacity of current researchers and other actors. The second is to influence the educational and professional training system to mainstream training in knowledge management so that the new crop of scientists and other professionals are well versed in the innovation systems approach.

4.1.4 Limitations of the methodology

It is recognized that the results for output 1 would have some limitations since the methodology used was a rapid appraisal devolved across four countries. The central aim of the appraisals was to reach out to managers and researchers working in S&WM in the four sampled countries and record their opinion. This was achieved while also quantifying the state of affairs with respect to the promotion of research results from soil and water management in ECA region. The main limitation is that because of the devolution, the data collection process was not harmonized across all the countries. This was attempted but it was realized that the circumstances found in the four countries were extremely different – something which was positive for studying the diverse nature of the NARS in the region but at the same time making it difficult to ask all the country teams to do similar things in the same way. One difficulty which was observed is for example the “un-expected” realization that researchers who are themselves very good in asking others to fill questionnaires are averse to doing the same themselves. The extent of this problem varied between the countries and was more serious in Ethiopia. In this case you find 60 respondents to the questionnaire but most did not respond to all the questions making analysis a bit tricky.

Similar difficulty was found in the review of policy and strategy documents because they differ in style across the countries. It is accepted that more inputs of an expert with policy analysis abilities would have helped. The plan that this was to be done by the project leader did not materialize because of language constraints in two of the countries. Perhaps the whole team should have been trained more on policy analysis. However, feedback from the training sessions and awareness raising activities indicated that the analysis although preliminary and limited, added appreciated value to the target stakeholders.

To conclude it is fair to say that the rapid appraisal provided credible numbers (which rarely exist) to support a useful debate, but as would be expected, the statistical rigour is not of the highest level. The strength of the rapid appraisal emanate from the fact that senior managers in four countries were engaged in these appraisals which reinforced their awareness of the problem of limited uptake promotion of results from S&WM research. This helped the project to leave a footprint in the target organizations which will lead to further and in-depth investigations. Certainly it is the reverse of this strength which could be the major weakness – requesting busy senior staff to undertake a rapid appraisal.

4.2 Conclusions

i) Policy and strategy documents of government ministries, departments and relevant organizations, recognize and put a lot of emphasis on ensuring that agricultural research results reach the farmer. However, most lack a comprehensive plan of action for managing knowledge, ensuring communication and uptake promotion, and effective scaling-up. Basically, the good will stated in policy documents has not been exploited and converted into action.
ii) Furthermore, government and institutional plans for making knowledge and technologies available to users is very limited as it is confined to the uni-directional dissemination of results from research to extension to farmers. In this model, researchers develop the technology and pass it to extension agents for dissemination to farmers, often neglecting other key players in the agricultural sector, such as input supply system, who are critical in knowledge uptake and utilization.
iii) As a consequence, most research projects and programmes do not include communication and uptake promotion plans because many researchers and research managers believe that their role is to generate technologies and let the extension agents promote uptake.
iv) Therefore, only a limited amount of time and budgets are allocated to project activities concerning communication, uptake promotion and scaling-up of research results. For this reason, research results are rarely packaged for different clients, and most are normally presented in the form of technical reports and papers for scientific conferences and journals.

Most critically;

v) The majority of researchers are not adequately trained for communication and uptake promotion. The survey results show that more than 50% of researchers claim to have not been trained in communication and uptake promotion, and consider this to be the main reason for the little communication and uptake promotion currently being implemented by researchers. This was confirmed by the findings that more often then not training programmes in universities and other agricultural colleges do not include communication and uptake promotion as part of training programmes for future researchers.
vi) Monitoring and evaluations of projects do not include assessment of uptake, utilization and impact of knowledge and the developed technologies. Therefore, reward and incentive systems like salaries, promotion and prizes do not demand evidence of utilization and impact.

4.3 Recommendations for Action

The main recommendation for ASARECA, SWMnet, and their international and national partners is to fully exploit the existing policy framework that support knowledge management to develop robust strategies, mobilize resources and invest in knowledge prospecting and brokering, increase investments in promoting uptake and utilization of knowledge products by farmers and other agro-entrepreneurs. More efforts need to be made at national levels to create and manage innovation systems as an umbrella framework for accelerated uptake and utilization of knowledge. The specific recommendations from the findings of this project are presented in the following subsections.

4.3.1 Constraints and barriers to limiting uptake promotion

i) Research organizations and others involved in the generation of data, information and knowledge for agriculture, should take full advantage of policy provisions to design and implement measures to ensure that the organization as a whole, its individual

programmes as well as projects have strategies and adequate funding for knowledge management, uptake promotion and scaling-up.

ii) Researchers should fully participate in uptake promotion and scaling-up activities as part and parcel of research project and generated results, information or knowledge should be packaged into different products to target the different needs and circumstances of different stakeholders.

iii) Given the proportion of current researchers who have very little understanding and skills in communication and uptake promotion, national, regional and international organizations should implement a massive and intensive professional development programme on knowledge management, including prospecting and brokering.

iv) In addition, the training curricula of graduate programmes should be reviewed to include communication, uptake promotion, and scaling-up skills. Recruitment criteria for researchers should also demand demonstration of skills in communication, uptake promotion and scaling-up.

v) Researchers should be required to produce proof of uptake and effective scaling-up of research results as part of the criteria for promotion, salary increments and other incentives such as merit prizes.

4.3.2 Awareness raising and advocacy

i) The main focus should be in producing more robust evidence on the benefits of investments in knowledge management, scaling-up and effective utilization of existing knowledge. The work that has been started by SWMnet to leverage more benefits for Africa from the experiences of India in integrated management of watersheds (Appendix I) is one such activity that require further support and expansion to other fields.
ii) The advocacy and awareness raising drive need to be expanded beyond the research system and target all the stakeholders that are important for a national agricultural innovation system. Products which already exist such as the CIM documentation and the materials produced by this project should be tested with a wide scope of stakeholders and then modified accordingly so as to support the proposed expansion of the target of the advocacy activities.

4.3.3 Capacity building

The main focus should be in ensuring that training in communication, knowledge management, sharing and scaling-up is mainstreamed to the postgraduate training programmes. This kind of investment will pay good dividends as global strategies for meeting the MDGs are calling for *increased ability of developing countries to conduct knowledge prospecting, that is, the searching, identifying, adapting and diffusing knowledge and technologies from all sources*.

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APPENDICES

Appendix I – Draft MoU between ASARECA and the Indian Council of Agricultural Research

This Memorandum of Understanding *(hereinafter called "MoU")* is entered into and executed by and between

THE INDIAN COUNCIL OF AGRICULTURAL RESEARCH, NEW DELHI, INDIA (ICAR) *having its office at Krishi Bhawan, New Delhi – 110 001, India, a Society registered under the Societies Registration Act, 1860 (hereinafter called "the COUNCIL") of the one part;*

And

THE ASSOCIATION FOR STRENGTHENING AGRICULTURAL RESEARCH IN EASTERN AND CENTRAL AFRICA (ASARECA), *whose Secretariat is located at Plot 15, John Babiiha Road, Entebbe, Uganda, an association of the National Agricultural Research Systems (NARS) of ten countries (Burundi, D.R Congo, Eritrea, Ethiopia, Kenya, Madagascar, Rwanda, Sudan, Tanzania and Uganda, and established through legal instrument signed among member countries dated 14th July 1995, MoU among members dated 8th September 1994 and Headquarter agreement dated 10th march 2003 (hereinafter called "ASARECA") of the other part*

PREAMBLE

Whereas the COUNCIL is charged with the responsibility in India to undertake, aid, promote, and coordinate agricultural and animal husbandry education, research and its application in practice; to act as a clearing house of information, not only in regard to research but also in regard to agricultural and related matters generally and to do all other things as it may consider necessary, incidental and conductive to the attainment of these objectives;

Whereas, ASARECA has a regional mandate to facilitate increased contribution of agricultural research to economic growth, food security and export competitiveness in Eastern and Central Africa (*hereinafter referred to as ECA*); by:

i. Improving the relevance, quality and cost-effectiveness of agricultural research;
ii. Establishing and supporting sub-regional mechanisms to reinforce and improve research collaboration among the NARS and with other regional and international organizations;
iii. Providing leadership in the implementation of several components of the Comprehensive African Agricultural Development Program (CAADP) of NEPAD;

iv. Providing coordination for the implementation in Eastern and Central Africa, of the CGIAR's sub-Saharan Africa Challenge Program, and
v. Assisting its stakeholders to gain access and effectively utilize the best and appropriate knowledge, information and technologies;

Whereas delegations of ASARECA member countries have visited India and identified that the COUNCIL has recorded significant achievement in developing and ensuring effective utilization of knowledge and technologies in the field of agriculture. Delegation of the COUNCIL visiting the member countries of ASARECA have confirmed that mutual benefits will be realized from strong multilateral collaboration and partnership;

Whereas both the COUNCIL and ASARECA recognize that the challenge of meeting the Millennium Development Goals in sub-Saharan Africa and India, where the majority of world's poor and hungry are concentrated, requires collaboration, partnership and sharing of existing knowledge, experiences and expertise so as to bring several benefits to many poor people, more quickly;

NOW THEREFORE, the COUNCIL and ASARECA inspired by their common objectives to contribute to an accelerated reduction of poverty and hunger, through research and capacity building in various disciplines of agriculture systems, have decided to enter into this MoU and agree as herein contained:

ARTICLE I

Objective

The primary objective of this MoU is to guide the establishment and implementation of a long-term partnership between the COUNCIL and ASARECA for **Research and Capacity Building in the Field of Agriculture** so as to enhance the capacity of each Party to contribute to poverty reduction and wealth creation in Africa and Asia.

ARTICLE II

Scope

2.1 The COUNCIL and ASARECA make a commitment to develop joint programs of activities to meet the objective of this MoU. Each of such programs will be governed by an agreement which shall be within the terms and subordinate to the MoU. The program agreements shall be signed by the Executive Secretary of ASARECA and by the Director General of the COUNCIL or his designated representatives (after due approval by the appropriate organs of ASARECA and the COUNCIL). Each supplemental work plan shall cover (i) the name of the specific program / project; (ii) specific objectives and procedures; (iii) division of responsibilities; (iv) budget and

source of funding, including schedule of payment and reporting; (v) duration; (vi) other provisions considered applicable to the program / project.

2.2 Without prejudice to the generality of section 2.1, ASARECA and the COUNCIL agree to pursue joint programs in the following areas, but with a provision to include others to be identified through a process of consultations:

i. Exchange of experiences and resource persons of India and ECA with respect to agriculture to sensitize policy makers, planners and senior managers to facilitate well informed definition of priorities, formulation of policies and strategies, and design and implementation of programs.
ii. Share and adapt knowledge, information, human resource and technologies on high priority themes, to ensure increased availability and utilization of options for sustainable management of agriculture in ECA and India.
iii. Collaborate with governments at various levels and with civil society organizations to improve their impacts on poverty reduction through practical action-oriented applied research and scaling-up of knowledge, technologies and management systems.
iv. Human resource development and consultancies that will contribute significantly to planning, designing and implementation of both research and development programs in ECA as well as in India.
v. Exchange of germplasm.

2.3 The collaborative programs envisaged in Section 2.2 shall be implemented by the following means:

i. Joint research, knowledge sharing and scaling-up programs and consultancies to deal with the identified priority issues;
ii. Inter-institutional links between institutes and centres of the COUNCIL and their complementing counterparts from the member organizations of ASARECA;
iii. Exchange of scientists, policy makers and other professionals and their proper placement in ECA or India. This will include an endeavor by the COUNCIL and ASARECA to invite each other to meetings, workshops and other for a of mutual interest in accordance with rules of procedure of attending such meetings of each party;
iv. Fielding of technical teams to work with the countries which are members of ASARECA to identify and implement development programs in integrated watershed management;
v. Granting of fellowships for higher education in agriculture; and
vi. Multilateral partnerships with the International Agricultural Research Institutes, other organizations and donors, mutually beneficial to all the parties.

ARTICLE III

Financial Obligation

ASARECA and the COUNCIL shall individually or jointly mobilize financial resources for joint activities to be agreed as specified in Article 2. The two Parties will coordinate the fund raising efforts, within the following principles:

i. A party shall not be bound by another party with regards to financial obligations unless the other party has given prior written consent to be bound;
ii. The COUNCIL and ASARECA will strive to include aspects of the partnership described in this MoU into their regular programs as a way of mobilizing internal resources as well as institutionalization of the partnership;
iii. Activities carried out under the aegis of this MoU will be subject to the availability of funds and personnel;
iv. Either Party may refer to the MoU while mobilizing funds but will not state or imply endorsement of specific fund raising proposals by the other Party unless such endorsement is given in writing;
v. Mutually agreed submissions to the donors.

ARTICLE IV

Governance

ASARECA and the COUNCIL agree to the following principles of partnership:

i. Common interest, equity, solidarity, transparency and regular consultations;
ii. Exchange of information on respective programs in order to identify areas of common interest, and also to ensure complementarty of partnership programs with other activities of the Parties;
iii. A Joint Oversight Committee with representatives from both Parties which will meet once in two years alternatively in New Delhi and Entebbe to assess and evaluate the execution of this MoU and suggest necessary measures for its development; and
iv. Research findings resulting from joint activities shall be published upon mutual agreements between both the parties. The publication (s) may be joint or separate as determined in each specific case, except in the case of annual reports. In the event of the parties failing to agree on the method of publication, either party shall be entitled to publish the findings separately after submitting the proposed manuscript (s) to the other Party and considering any comments and suggestions that may be offered the latter.

ARTICLE V

Designated Representatives

The designated representative of the COUNCIL will be the Director General or Deputy Director General (NRM). The designated representative of ASARECA will be the Executive Secretary or his representative.

ARTICLE VI

Amendments

Any amendments to this MoU shall be agreed upon by the parties in writing.

ARTICLE VII

Dispute Resolution

Any dispute arising out of the operation of this MoU shall be resolved amicably between the parties herein through a process of negotiation and consultation.

ARTICLE VIII

Termination

i. Any Party desirous of terminating this MoU shall give the other party twelve months notice in writing;
ii. Termination of the agreement in such a manner shall not discharge a party from any liability that shall accrue during the operation of this Memorandum of Understanding.

ARTICLE IX

Notices

i. Any notice required to be given, or pursuant to this MoU shall be in writing;
ii. Such notice shall be deemed to have been duly given or served when delivered by hand, mail, courier or fax to the other party to which it is required to be given or made at the following addresses specified below:

For the COUNCIL	For the ASARECA
Dr. Mangala Rai, Secretary, DARE & DG, ICAR, Krishi Bhawan, New Delhi – 110 001, India Ph.91-11-23382629, 23386711 Fax: 91-11-23384773 Email: mrai@icar.delhi.nic.in	**Dr. Seyfu Ketema,** Executive Secretary of ASARECA, Plot 15, John Babiiha Road, P.O.Box 765, Entebbe, Uganda Ph. 256-41-320212 Fax: 256-41-321126 Email: secretariat@asareca.org

ARTICLE X
Coming into Force

The MoU shall be effective from the date of its signing by both the Parties and shall remain in operation until either Party serves notice on the other of its intention to terminate it.

IN WITNESS WHEREOF, the parties hereto have affixed their signatures:

For on behalf of the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA)

1. Name: Dr. Seyfu Ketema

   Title: Executive Secretary, ASARECA

   Signature: _____

   Date: _____ _____

Place _____

For and on behalf of the Indian Council of Agricultural Research (the COUNCIL)

2. Name: Dr. Mangala Rai

Title: Secretary, DARE & DG, ICAR

Signature: _____

Date: _____ _____

Place _____

Appendix II – The IMAWESA Project

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions **
GOAL: To contribute to poverty reduction through improved policy, institutions, practices and performance of smallholder management of agricultural water in ESA	1. Evidence of increased incomes, asset base and empowerment of targeted smallholders in at least 3 of the project target countries 2. PRS processes, sector-wide and sub-sectoral programmes, sectoral policy frameworks, public investment plans, and regional development plans reflect key issues and development options for smallholder management of agricultural water in selected ESA countries 3. New policies established or existing policies modified to ensure improved access to and management of agricultural water by rural poor in selected ESA countries	Regional and national level statistics and surveys monitored against 2005 baseline Review of agricultural and other rural development strategies of the target countries, IFAD and other target organizations against 2005 baseline Review of government policy papers	
PURPOSE: To strengthen capacity of stakeholders* to plan and utilize best options and enabling framework for smallholder management of agricultural water in ESA	Stakeholders in at least 3 countries in ESA have adopted best-bet practices for smallholder management of agricultural water: • Institutional arrangements reflect smallholder interests in agricultural water • Improved performance of smallholder agricultural water management investments • Institutionalized sharing of knowledge within and across countries • Policy options available to policy makers in smallholder management of agricultural water	• Evaluation and Portfolio reviews • Policy documents at regional, country and local levels	National commitment to implementation of policies Current commitment to increase investments in agriculture is sustained (Maputo Declaration adhered to)
Outputs			
1. Enhanced policy dialogue for improved pro-poor enabling framework for smallholder management of agricultural water in ESA	By end of project year 3, a validated set of stakeholder-specific tools and guidelines for multi-stakeholder policy dialogue on smallholder agricultural water management in ESA available	• Project reports • Communication products	Political commitment to support smallholder management of agricultural water
2. Key issues to guide future interventions and investments for smallholder agricultural water management in ESA are understood	By project year 3, IFAD supported smallholder agricultural water management programmes and COSOPs: • Have increased business-orientation and opportunity-focus – including ex-ante analysis • Adequately take on-board livelihood and social strategies of the poor • Are innovative in pro-poor approaches to environmental sustainability of smallholder management of agricultural water	• Reports on participatory identification, planning and design of programmes • Reports on participatory appraisal and impact assessment of programmes • Reports of implementing agencies of proposed programmes	
3. Improved effectiveness in the management and implementation of IFAD supported smallholder AWM programmes in ESA	By project year 3, Smallholder agricultural water management components of IFAD supported programmes in ESA show significant improvement in effectiveness – against 2005 baseline	• Project M&E reporting • Reports on project specific capacity strengthening activities • PF Annual Portfolio Review • Supervision, monitoring, evaluation and review reports	

Narrative summary	Objectively verifiable indicators	Means of verification	Important assumptions **
4. Enhanced sharing of knowledge and best practices in smallholder management of agricultural water, among countries, institutions and programmes (current and future)	• By project year 2, a user friendly regional knowledge base on options, practices and experiences in smallholder management of agricultural water is in place • By project year 3, at least 3 best-bet practices proved in one country have been validated in at least 3 other countries	• Relevant publications (paper and electronic) on the knowledge base • Records of knowledge sharing activities (e.g proceedings, email discussions, and hits on the web-page)	

Activities	Milestones	Assumptions **
1.1 Evaluate the effect of policies, legislations and other institutions on the performance of agricultural water management components of IFAD-supported programmes in ESA and analyze policy options	By end of project year 1, a baseline database of policies, strategies and stakeholders is established	
1.2 Validate strategies for communication and dialogue between IFAD, governments and other stakeholders on the options for agricultural water policies and strategies – based on experiences from IFAD-supported and other relevant programmes		
1.3 Engage stakeholders in policy advocacy and dialogue		
2.1 Undertake studies on key water management issues, e.g. possibilities for IFAD to support improved water management under rain-fed farming, water governance, integrated watershed management	By project year 2, a minimum of 3 studies have been conducted By the end of project year 1, a communication strategy is developed	
2.2 Establish conclusive evidence of the benefits of best-bet options for water management in rainfed and small-scale irrigation systems, in relation to poverty reduction with social equity		
2.3 Develop communication products and activities targeted at IFAD decision makers, its consultants and partners involved the identification and design of interventions		
3.1 Establish training and capacity-building needs of programme staff and implementers in the target countries, institutions and programmes, with respect to smallholder management of agricultural water for impact on poverty reduction	By project year 1, training and capacity building needs are identified Minimum 2 courses developed and implemented per year Minimum 3 capacity strengthening activities are implemented per year 1-2 exchange visits conducted per year	
3.2 Design and implement short-term professional development courses responding to the identified needs - in cooperation with national training institutions		
3.3 Provide short-term technical support to programmes and national institutions through consultancy and supervision missions/inputs – based on exchange of experienced national expertise with necessary support from regional and international experts		
3.4 Develop communities of practices through cross-portfolio peer reviews, exchange visits by project staff and implementers, and effective platform for continuous exchange of information		
4.1 Promote the practice of process documentation by all programmes as a means of ensuring adequate contribution to the knowledge base,	By mid project year 2 an email discussion forum is operational By end of project year 1 and year 3 regional agricultural water management implementation workshops have been conducted By end of project year 1 a knowledge base of experiences, best practices, institutions and persons is established	
4.2 Develop a knowledge base of programmes, experiences, best practices, institutions and persons on smallholder management of agricultural water, and facilitate the preparation of communication materials and content in the form most suitable for internal consultations and knowledge sharing		
4.3 Promote and facilitate the utilization of the knowledge base and other cross-portfolio information and experience through strategic combination of modern IT techniques and traditional approaches		
4.4 Promote formal and lasting institutional linkages within and across counties in ESA		

* Stakeholders are: Rural smallholders, policy makers, programme implementers, donor organizations, NARES:

** Critical assumptions and risks will be identified (if any) in the start-up phase by the PMU guided by ASARECA's M&E unit:

Appendix III – INCO-DEV Proposal

B.1.2 Scientific objectives

In the tropics and subtropics, ground cover and topsoil management play a key role in determining soil fertility and the partitioning of rainfall into direct surface runoff and infiltration. Runoff and infiltration depend partly on upon rainfall intensity, which is commonly very high in semi-arid regions, but also on slope length and roughness, land cover, and soil surface conditions - which can all be modified. Therefore, knowledge of soil and terrain qualities, including their spatial distribution is critical to the management of water resources.

In this project we will combine the two most important databases already in operation:

- Global Soil and Terrain (SOTER) database: showing the location and extent of the soil-landform-climatic units (that determine the effectiveness of particular technologies). SOTER units will be distilled into management domains to explain the particular management needs of each unit and the potential for increasing its *green water* and nutrient status and the timing, quantity and quality of the blue water delivered to streams and groundwater. SOTER is a system for storage, retrieval and handling digital biophysical data; sets of files for use in a Relational Data Base Management System (RDBMS) and in a Geographic Information System (GIS). Outputs include a range of single- and multiple-attribute maps. The basis of SOTER is the identification of areas of land with a distinctive, often repetitive, pattern of landform, lithology, surface form, slope, parent material, and soil. Tracts of land distinguished in this manner are named SOTER units. Each SOTER unit thus represents one unique combination of terrain and soil characteristics.

- World Overview of Conservation Approaches and Technologies (WOCAT): an international network of soil and water conservation specialists, undertaking initiatives at regional and national levels, with backstopping from experienced members of the consortium. At the global level, WOCAT is co-ordinated by a management group and secretariat. Experience of technical aspects of soil and water management and how to start, organise and maintain national and regional initiatives is made available in the form of a global database of tried-and –tested management practices and their biophysical, conomic and social requirements; guidelines for implementation, and training courses .The main activities are carried out by national and regional institutions.

These 2 databases are not interlinked. Although WOCAT documents relevant social and economic circumstances, its focus is the technology. Research and practice has abundantly proved that in order to mobilise people, local and regional communities to change and improve their land and water management practices, these social/cultural realities have to be included. We will therefore develop:

1. A query facility to combine the data in the WOCAT and SOTER database on using the geographical location as key, to find the most promising instruments and technologies to improve Green Water Management.
2. A filter order to filter away in the query, those options that can not be implemented because of social/cultural conditions and context.

With this new query and filter facility, we will have forged one missing link that is needed to create an effective decision support system for water management in arid an semi-arid regions on Africa. Beyond this, we shall lay the foundations of a mutual learning alliance between the researchers, practitioners in the regions, and the land users both to support the actual managers of the land with the training and support they need t implement best practice, and to feed their vital experience into the formulation of best practice.

Appendix IV – ASARECA Plans for Knowledge Management

ASARECA Communication and Knowledge Management Strategy (CKMS)

Terms of Reference

Draft of: 12 July 2005

1. Background

The Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA) coordinates regional research activities in ten member countries in the region. ASARECA is governed by a Committee of Director Generals (CD), representing the National Agricultural Research Institutes of these countries, and implements its activities through a Secretariat based in Entebbe and a set of Networks, Programmes and Projects (NPPs). For its donors and stakeholders, ASARECA provides valuable services:

- provides a forum for donors, partner organization and NARS to meet
- establishes a collective voice for interaction with regional economic commissions and global research
- assumes planning, managerial and accountability responsibilities that donors would not be willing or able to assume for themselves and
- can aggregate funding from many sources into common basket funding and allocate it efficiently to accepted goals.

ASARECA operates through 17 regional networks, programmes and projects (NPPs) in all member countries The ASARECA secretariat hosts four of the NPPs. The rest are housed by CGIAR and other IARCs in different locations including Kampala, Nairobi, Dar es Salaam, Arusha and Addis Ababa. This has become a challenge to both the Secretariat functions and the linkages with its NPPs, backstopping institutions, other key partners and stakeholders. The responsibilities delegated to the ASARECA Secretariat include:

- strategic planning for regional collective action,
- donor reporting,
- management of networks
- serve as a regional forum to discuss new ideas
- represent Eastern and Central Africa in regional and global fora
- reduce transactions costs for donors and scientific partners seeking collaboration with the region, and
- promote public awareness, scientific communication and advocacy, including resource mobilization, on behalf of research in the region.

With such a broad range of responsibilities, it necessitates that ASARECA develops a communication and knowledge management strategy to facilitate communication both internally and externally in order for it to operate efficiently and to deliver to its beneficiaries

2. The problem and Rationale

Main issues can be categorised into internal (ASARECA CD, Secretariat and NPPs) and external (stakeholders)

2.1. Internal

The ASARECA secretariat hosts four NPPs. The rest are housed by CGIAR and other IARCS in different locations including Kampala, Nairobi, Dar es Salaam, Arusha and Addis Ababa. This has become a challenge on effective communication between the secretariat and the NPPs and amongst the NPPs. The challenges include:

- Policies, procedures & guidelines for producing and availing key publications and documents in a central location
- Processing these publications so that they can be stored and retrieved easily
- Storage of publications physically and electronically
- Disseminating the information to end-users – communication strategy/ plan in ASARECA & NPP projects/ activities
- Criteria on what documents are for internal use only and which can be accessed externally
- The NPPs and support units like M&E, CGS have complex and expanding information needs that requires an MIS
- As ASARECA is housed by different organizations, the tendency is that some of its work through the NPPs is overshadowed by the host organizations. This necessitates some form of branding to ensure visibility and acknowledgment of its work. Branding could include the website, publications, Email addresses etc.

2.2. External

ASARECA SO emphasizes **disseminating** agricultural technologies that **respond** to the *markets*. This calls for the end user to be clearly defined, then be communicated to at the right time and in the most appropriate manner. In the planned TTP (now referred to as The Technology Uptake and Up-scaling Facility (TUUF)), it is recommended that ASARECA should: *document and analyse existing TT-related approaches and promote the design of dissemination pathways within research projects coordinated by the NPPs.* The PMRP recommends that this could start by documenting and publicising good examples of technology transfer and dissemination pathways, providing useful information on conditions for successful set up and implementation of scaling up and scaling out of research products. In addition, it is recommended that NPPs should start by developing inventories and characterise available technologies ready for promotion, define potential user groups / systems - farm typologies, and match technologies with people.

3. Objectives and scope of study

- Characterize ASARECA's internal and external communications & knowledge management functions - current & strategic?
- Define the strategic orientation towards knowledge and communication management
- Delineate the scope of ASARECA's reporting system
- Review ASARECA system of collection and storage/archival system for its reports, publications
- Describe how to translate ASARECA's SO to the reality of *introducing* & *disseminating* technologies? Uptake and Up-scaling
- Response to markets. Information for NPPs about end-user profiles (social, economic, cultural & environmental, agro-ecological aspects {SAKSS }) and needs (anticipated benefits)
- To define the stakeholders and partners (NARS, extension, farmers, Government, NGOs, agribusiness/service providers, media, general public, donors and others)
- Identify strategic partners for ASARECA for communication & Knowledge management (uptake & up-scaling)

4. Outputs

- Proposed functions (Internal & External) communications & knowledge management (CKM) functions
- Propose structure of CKM unit and resources required
- Strategies & policy (ies) for information flow (acquisition, processing, documentation, storage & retrieval, exchange/sharing, brokering, dissemination) among ASARECA NPPs, within the Secretariat and end-users.
- Targeted information products and services e.g. ASARECA Newsletter, Website, technologies (link to TUUF)
- Brokering – communicating research outputs to range of end-users (academic audiences, service delivery practitioners, government ministries, NGOs, media, etc)
- Use of appropriate conventional media/ channels of communication (print, e-mail & Internet, CD-ROM, audio, visual)

The proposal should take into consideration ASARECA's future role in:

- Management of NPPs through effective systems for planning, monitoring, evaluation and impact assessment.
- Representation and institutional memory on collaboration with global and regional research initiatives with effective communication back to members.
- Communication and public awareness on behalf of research in the ECA region based on sound information and packaging for regional and global audiences.

5. Activities and Milestones

- Drafting ToR
- Inception Meeting with consultants to review and finalise ToR in consultation with ASARECA staff
- Desk studies to review key background documents, related studies and other information sources
- Visits to key institutions – ASARECA NPPs, backstopping institutions, NARIs and key partners
- Consolidation of data collected and drafting of reports
- Workshop for ASARECA NPPs on Managing and Scaling up of Knowledge
- Interim report, feedback and revisions
- Consolidation Meeting: presentation of report and discussion on proposed recommendations, action plans and policies
- Consolidation / editing of final CKM Strategy (Policies?)

5.1. Specifically the Inception Meeting will:

- review, discuss and finalize individual Terms of Reference for the consultants
- review and agree on the study methodology and detailed work plan
- agree on the responsibilities of the individual consultants and on the reporting mechanisms

- agree on report outline, format and style template
- discuss any other pertinent matter

5.2. The Workshop for ASARECA NPPs on managing and scaling up of knowledge will:-

- Create awareness and understanding by ASARECA NPPs on the science of turning knowledge into action
- Build capacity of NPPs to design & implement communication and knowledge strategies at organizational and project levels
- Present initial findings of the study to NPPs

5.3. The Consolidation Meeting will be the forum to:

- present the findings of the report
- discuss and agree on proposed recommendations and action plans

The resulting action plan should provide clear guidelines / criteria on priorities and an organizational structure to achieve them

6. Inputs

Inputs include the deployment and mobilization of a team of two (or three) consultants one of whom will be the team leader.

7. Profile of Consultants

- Good knowledge of agricultural ICM at international level (agricultural university, international organizations)
- Previous participation in development of I&C strategy
- Good understanding of the ASARECA CCF / LF, IAR4D issues
- Knowledge of the ASARECA secretariat, NPPs and NARIs
- Good knowledge of ICTs, informa*tion systems, etc*

As this assignment is complex and requires varying expertise, it is recommended that the team should include:

- One consultant with good knowledge and experience at global level of key issues in ICM/IT
- The second consultant should have some knowledge or experience with methodologies and approaches for technology uptake, scaling-up and scaling-out and with uptake pathways in the framework of Integrated Agricultural Research for Development (IAR4D). He/she should have extensive experience in the Eastern and Central Africa region.
- The third consultant should have bias for IT

It is recommended to have a lead consultant (international/regional level) to be assisted by regional consultant (s) to be drawn from any of the ASARECA countries.

8. Outline Terms of Reference for the Consultants

Detailed individual terms of reference for the assignments will be prepared and agreed upon during the inception meeting. It is estimated that the services of the consultants will be delivered on a staggered basis over a total period of xx calendar months. In consultation with

ASARECA and under the supervision of RAIN the consultants will perform the following tasks:

- Review ASARECA key documents and any related documentation on the subject (DFID, SAKSS, SSA-CP etc)
- Identify and list institutions/organizations to be interviewed, focusing on CG centres, SROs, NARIs, NPPs and, identify key issues of communication and information management
- Assess the strengths, weaknesses, opportunities, and threats relevant to communications activities
- Assess the current ASARECA demand for information services
- Take stock of ASARECA production, design, distribution, and marketing of publications
- Based on feedback from the study and other documentation available, give recommendations on priority area of focus
- Information and knowledge sharing/management processes
- Intranet and internet activities
- Communication /PR functions of the Secretariat
- Public awareness efforts and priorities for the future
- Recommend action plans (short, medium, long-term) specifying institutional capacity (human, financial & physicals) needs, delivery mechanisms (hard copy, electronic, web-based, etc.),

9. Key documents to be made available to consultants

- ASARECA Strategic plan (old)
- ASARECA Strategic plan (new / Howard)
- CCF
- LF under the RSP (revised June 2005)
- PIVA report
- Resources from the SWMnet CKM workshop
- Etc.

10. Roles and responsibilities

10.1. Lead Consultant

- Attend briefing meeting at ASARECA in Entebbe
- Review the terms of reference
- Finalise methodological approach after due consultation with RAIN / ASARECA

10.2. Role of Consultants

- Familiarise themselves with background documents received from RAIN / ASARECA including the Terms of Reference

10.3. Role of RAIN

- Draw up Terms of Reference and other relevant documents
- Appoint the Consultants
- Establish contacts between ASARECA and the consultants
- Provide relevant background documents to the Team
- Draft budget and discuss contractual obligations with the Team
- Technical guidance to consultants

- Overall responsibility for the supervision and implementation of the study
- ……..

Implementation schedule

- Preparation/Finalisation of ToR;
- Identification/ short-listing of (potential) consultants; Call for offers (July 2005)
- Selection of consultants
- Inception Meeting
- Contractual arrangements/ briefing
- Start date of contract:
- Implementation period
- Consolidation Meeting
- End date of contract:

Appendix V – ASARECA NRM Strategy

To pursue the stated mission, priority attention will be focussed on the following thematic results in the next 10 years (2005 – 2015):

Result 1: Improved Development of Natural Resources-Based Enterprises

Result 2: Improved Strategies for Adaptation and Coping with Climate-Induced Crises and Shocks

Result 3: Enhanced Productivity and Conservation of Agro-ecosystems

Result 4: Enhanced Beneficial Conservation of Agro-ecosystems for Socio-economic Benefits and Environmental Services

Result 5: Improved Incentives to Invest in the Management of Natural Resources by Primary Users, Governments and other Stakeholders

Result 6: Strengthened Institutions and Social Capital for Improved Governance and Support to NRM

Result 7: Strengthened Capacities and Competencies in NRM Research for Development

Result 8: Increased Effectiveness in Knowledge Management, Brokering and Sharing

Appendix VI – ASARECA CGS

NATURAL RESOURCES MANAGEMENT SUITE : Call Ref - ASARECA05/RC01-NRM–01

Title: Integrated Application of Knowledge, Information and Technologies to Enhance Productivity and Conservation of Agro-ecosystems

1. Introduction

Agricultural productivity per unit of natural resource (e.g land and water), labour and capital in ECA is one of the lowest in the world, a fact closely related to escalating poverty, food insecurity and reduced real investments in the management of agro-ecosystems. As a result, agricultural lands have experienced serious productivity reductions due to soil erosion and inadequate replenishment of plant nutrients. In irrigated areas, large tracts of land are rendered unproductive due to salinization and sodicity. At the same time, there is overwhelming evidence that research, development programmes and indigenous practices have developed a substantial amount of viable technical and institutional interventions that address BOTH productivity and conservation aspects, which have not been taken up to the fullest scale possible. The good stock of knowledge, information and technologies include, for example:

- Fertilizer tree systems, and herbaceous and other N-fixing legumes grown on conservation strips/bunds,
- Rock phosphate and approaches for using organic and inorganic combinations,
- Intercropping multipurpose trees with crops, fruit trees, forage crops,
- Approaches to soil and water conservation, rainwater harvesting and precision irrigation,
- Information sharing Platforms that allow continuous consultation in policy and decision making, and
- Decision support systems that help heterogeneous users in different situations make technology choices on how to improve productivity and conservation.

However, despite this accumulation of knowledge locally and globally, productivity in ECA remains very low in nearly all farming systems, and degradation of agro-ecosystems continues at an alarming rate. This has shown that although the proven knowledge or technologies may be good, applying it on its own is inadequate in providing viable solutions to the problems of low productivity coupled with accelerated degradation. Most farmers and agro-pastoralists have always been aware of these links because they must deal with many aspects of resource management in order to maintain their lands and livelihoods. Therefore, there are strategic **gaps** in scaling-up and optimising integrated solutions, with respect to resource and enterprises management at field, landscape and watershed levels. These strategic gaps exist mainly because of:

- Few scaling-up methods that combine tacit (local) and formal (science) knowledge,
- Limited approaches that integrate across sectors to achieve a holistic approach to problem solving,
- Inadequate understanding of up-take and impact pathways so as to ensure that all key stakeholders are playing their roles adequately,
- Non-supportive policies especially with respect to strategic public investments designed to underwrite long-term risks, and
- Inadequate value-addition and linkages to markets, leading to poor returns to investors.
- Lack of decision guides that help KIT users to apply NRM and productivity raising options to specific and diverse situations

2. The research assignment of call ASARECA05/RC01-NRM-01

This call for concept notes responds to the ASARECA NRM theme: ***Enhanced Productivity and Conservation of Agro-ecosystems,*** and the project will focus on ***closing the loop*** by developing strategic solutions to critical barriers to uptake and scaling-up of proven K.I.T. that fits targeting both conservation and productivity improvement. The research is targeting resource poor smallholder farmers and agro-pastoralists, agro-entrepreneurs, and farmers' support systems the ECA sub-region. The main working hypothesis is that: *increased synthesis, adaptation and integrated but targeted application of existing knowledge, experiences and technologies coupled with wider scaling-up and out of KIT will offer greater opportunities of enhancing productivity and conservation of agro-ecosystems under smallholders' systems in the ECA sub-region, leading to an effective contribution to meeting the millennium development targets on hunger and poverty reduction*. Therefore, this call seeks to address one or more of the existing gaps (see bullets above) to scaling-up and wider utilization of the considerable body of knowledge, information and technologies which already exist for enhancing BOTH productivity and conservation. This call will therefore focus more on identifying barriers to uptake and large scale utilisation of innovations that have produced good results at pilot scales. Then, the research will investigate and validate strategies for overcoming such barriers. In particular, it will evaluate methods that assist farmers, agro-pastoralists, agro-entrepreneurs, planners and policy makers to innovate for themselves. This would enable them to produce / fine-tune technologies and practices and enabling policies that are relevant to their circumstances and objectives. This will include adaptation of decision support systems to empower the stakeholders to effectively use the existing knowledge to drive decisions.

3. Logical framework and Budget

This call is designed for a specific goal and purpose as stated below. The text for the **Goal** and **Purpose** provided must be inserted into the standard logframe format that is provided in the CN format. The team must then proceed to develop the complete logframe.

Goal: Enhanced Productivity and Conservation of Agro-ecosystems in the ECA sub-region (with special attention to improving the livelihoods of smallholders).

Purpose: Critical barriers to scaling-up and integrated application of existing NRM knowledge, information and technologies (KIT) for increasing productivity and conservation of agro-ecosystems under smallholder systems overcome/ removed

Budget: Maximum of €420,000 over a three year period.