

Finding better ways of disseminating research results

RIU

Validated RNRRS Output.

Concerted efforts to reform extension work in poor, semi-arid areas of Kenya and Tanzania have yielded concrete results and a host of useful information. The project worked to ensure that communication and promotional strategies were embedded within existing systems and organizations. This was seen as key to ensuring that all stakeholders had better access to new products and knowledge. Other areas addressed included identifying what information stakeholders were demanding, and characterizing the ways in which people are currently given information. Working closely with farmers, the project also assessed how effective the different pathways and methods it used to reach farmers were. In Central Tanzania, for example, such testing indicated that the efforts had resulted in a high level of farmer uptake among both men and women.

Project Ref: **CPP37:**

Topic: **7. Spreading the Word: Knowledge Management & Dissemination**

Lead Organisation: **Natural Resources Institute (NRI), UK**

Source: **Crop Protection Programme**

Document Contents:

[Description](#), [Validation](#), [Current Situation](#), [Environmental Impact](#),

Description

CPP37

Research into Use

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Geographical regions included:

[Kenya](#), [Tanzania](#),

Target Audiences for this content:

[Crop farmers](#),

A. Description of the research output(s)

1. Working title of output or cluster of outputs.

In addition, you are free to suggest a shorter more imaginative working title/acronym of 20 words or less.

Listed Title:

COMMUNICATION STRATEGY FOR EAST AFRICAN SEMI-ARID SYSTEMS

Working Title: RESEARCH INTO USE STRATEGY DEVELOPMENT FOR LESS FAVOURED AREAS

2. Name of relevant RNRRS Programme(s) commissioning supporting research and also indicate other funding sources, if applicable.

CROP PROTECTION PROGRAMME

3. Provide relevant R numbers (and/or programme development/dissemination reference numbers covering supporting research) along with the institutional partners (with individual contact persons (if appropriate)) involved in the project activities. As with the question above, this is primarily to allow for the legacy of the RNRRS to be acknowledged during the RIUP activities.

Main projects

R8428 [2005 – 2006] Crop Protection Communication and Research Promotional Strategies for Semi-arid East Africa (Kenya and Tanzania)

R8349 [2003 – 2005] Developing Crop Protection Research Promotional Strategies for Semi-arid East Africa (Kenya and Tanzania)

Closely associated projects:

This project promoted outputs from the semi-arid cluster of preceding CPP projects in E. Africa (e.g. R7518 Management of Sorghum Smut, R7572 Insect Pests of African Sorghum; R7504 Integrated Control of Striga in East Africa; R7606 grain mould; R7445, R8105 rosette resistance; R8194 green manure; R8197 cotton IPM; R7966 Army worm).

It also shared ideas on approaches and issues with R8281, Uganda Linking Project, and drew on research outputs from other RNRRS research and research funded through DFID bilateral country programmes.

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4. Describe the RNRRS output or cluster of outputs being proposed and when was it produced? (**max. 400 words**). This requires a clear and concise description of the output(s) and the problem the output(s) aimed to address. Please incorporate and highlight (in bold) key words that would/could be used to select your output when held in a database.

People in **less favoured areas** depend on agriculture for their livelihoods but have very **poor access to agricultural services**, including advice and training on new products and technologies. The reasons for poor access by farmers include:- poorly developed systems for access of local-level service providers to new knowledge and products; private sector failure in service delivery; under-resourced public extension services; weak infrastructure, limited technical capacity among some service providers (e.g. some NGOs and CBOs).. The return on significant investment in agricultural research relevant to less favoured areas will be low unless the research outputs reach farmers. **Strategies and tools for improving local access** to high quality agricultural knowledge are a pre-requisite for improving livelihoods and reducing vulnerability.

These problems were addressed through 3 main outputs:

1. Approaches and methodologies for developing strategies for getting research into use in the less favoured areas

The approach ensured that **communication and promotional strategies** to widen access by all stakeholders to new products and knowledge were **embedded within existing institutional frameworks and initiatives**, including **policies and programmes reforming rural service delivery**. To enhance **sustainable capacity development at the local/meso level**, key actors were facilitated to develop a strategy that widens access to new knowledge and products within a specified mandate area. Developmental elements of the agricultural communication/promotion strategy include:-

- **Identification of demand for new knowledge** (including review and improvement of existing mechanisms of identifying demand),
- **Characterisation of current knowledge access mechanisms**, barriers to knowledge access, and stakeholder knowledge access preferences,
- **Characterisation of cost-effective options for the development and delivery of new agricultural knowledge**,
- **Approaches and tools for the monitoring and evaluation of emerging agricultural knowledge communication and promotion strategies.**

2. Locally developed information and training materials – focus on **locally validated crop protection and post-harvest technologies for semi-arid areas (Sorghum, Maize, Tomatoes, Onions, Groundnuts - training manuals, leaflets, posters, radio programmes, videos).**

3. Capacity building of the main stakeholders in relation to the above two outputs.

An action research process, with **cross-cutting applicability for getting research outputs in to use in other less favoured areas**, enabled key actors to apply their knowledge and experience, and to “own” strategies that took account of local conditions and specific experiences of agricultural service delivery. Strengthened local capacity enabled much larger numbers of agricultural service providers and farmers to access new knowledge through trusted sources and more sustainable processes.

5. What is the type of output(s) being described here?

Please tick one or more of the following options.

Product	Technology	Service	Process or Methodology	Policy	Other Please specify
		X (**)	X		

***The strategy development process provides a service of situational analysis and capacity development for meso-level research and innovation platforms in less favoured areas. This process could be used also in “better favoured” areas with higher productive potential.*

6. What is the main commodity (ies) upon which the output(s) focussed? Could this output be applied to other commodities, if so, please comment

The projects which piloted this process worked with a range of technologies, most of which came through the Crop Protection Programme and related to pre and post-harvest IPM for a range of crops including Sorghum, Maize, Tomatoes, Onions, Groundnuts. However the process followed has cross-cutting applicability across a very wide range of commodities.

7. What production system(s) does/could the output(s) focus upon?

Please tick one or more of the following options. Leave blank if not applicable

Semi-Arid	High potential	Hillsides	Forest-Agriculture	Peri-urban	Land water	Tropical moist forest	Cross-cutting
X		X (P)	X (P)			X (P)	

P= potential application – some of the principles, approaches and tools involved could also apply to high potential and peri-urban production systems.

8. What farming system(s) does the output(s) focus upon?

Please tick one or more of the following options (see Annex B for definitions).

Leave blank if not applicable

Smallholder rainfed humid	Irrigated	Wetland rice based	Smallholder rainfed highland	Smallholder rainfed dry/cold	Dualistic	Coastal artisanal fishing
X			X (P)	X (P)	X (P)	X (P)

P= potential application – the principles, approaches and tools developed in a semi-arid context apply to a range of farming systems – more typically those where private sector agricultural services are less well developed.

9. How could value be added to the output or additional constraints faced by poor people addressed by clustering this output with research outputs from other sources (RNRRS and non RNRRS)? (**max. 300 words**).

Please specify what other outputs your output(s) could be clustered. At this point you should make reference to the circulated list of RNRRS outputs for which proformas are currently being prepared.

There are three major opportunities for clustering this output with related outputs:-

- 1) Combining insights and good practice from the RNRRS and elsewhere relating to the validation, promotion and communication of research knowledge,
- 2) Linking knowledge promotion with initiatives improving access to (input and output) markets – particularly in the context of widespread market failure in less favoured areas and its attendant consequences for poverty and livelihood strategies,
- 3) Drawing on well described and validated technical knowledge (and products) relevant to less favoured areas.

These are summarised below in three tables of projects with clustering opportunities:-

Table 3. Projects likely to offer complementary insights and good practice for validation and communication of research knowledge in the context of less favoured areas:-

R Nos	Main Opportunity
R8299, R8219, R8296, R8041, R7813, R7472,	Complementary methods for production, distribution and evaluation of technical training materials.
R8429, R8281	Complementary methods for the identification of demand and validation of new knowledge
R8438, R8297,	Methods for engaging with the private sector and tapping local entrepreneurial capacity for agricultural service provision
R7502/R6306	Tools for institutional capacity building and change vis a vis promotion of new knowledge.
R7865, R8381	Concepts and approaches for elaborating promotional strategies
ZC0208	Tools and approaches for validation and promotion of livestock knowledge and products in less favoured areas

Table 4: Projects likely to offer complementary insights and good practice for improving farmers' access to input and output markets in the context of less favoured areas.

R Nos	Main Opportunity
R8104, R8435	Methods and institutional mechanisms for sustainable supply of new crop varieties in less favoured areas
R8480	Promotional material on seed management for less favoured areas.
R8422 R8250	Tools for adding value to improved availability of new technical knowledge for raising productivity.
R8182 R8418	Tool for adding value to improved availability of new technical knowledge for raising productivity.

R6344, R7013, R7668 R8114	Market links - Options for access to inputs and storage facilities to enable strategic selling of surplus
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Without being overly prescriptive, value could be added from a range of RNRRS projects targeting rainfed areas (including semi-arid), including outputs relating to crops, livestock and post-harvest technologies. This would depend on the opportunities and demand where promotional strategies are being developed.

Table 5: Projects likely to offer technology and supply options relevant to less favoured areas

R Nos	Main Opportunity – Complementary Technical Knowledge and Related Methods**
R8452 R8215	Technical options for improved productivity of maize based systems in less favoured areas of E Africa.
R8457, R8243, R8458,R8167	Technical and institutional options for sweet potato promotion in relevant less favoured areas
R8456, R8303	Technical and institutional options for cassava protection in relevant less favoured areas
R8417, R8341	Technical options for vegetable IPM in relevant less favoured areas
R7445, R6811	Groundnut options for relevant less favoured areas
R8403, R8197	Cotton IPM options for relevant less favoured areas
R8449, R8212	Maize and sorghum IPM and soil fertility technologies for relevant less favoured areas
R8191, R7473, R7474, R6655, R7189, R7440,	Cotton and cereal technologies for relevant less favoured areas

Validation

B. Validation of the research output(s)

10. How were the output(s) validated and who validated them?

Please provide brief description of method(s) used and consider application, replication, adaptation and/or adoption in the context of any partner organisation and user groups involved. In addressing the “who” component detail which group(s) did the validation e.g. end users, intermediary organisation, government department, aid organisation, private company etc... This section should also be used to detail, if applicable, to which social group, gender, income category the validation was applied and any increases in productivity observed during validation (max. 500 words).

Promotion and communication strategies were developed through action-learning with key stakeholders involved in agricultural research and development service provision for semi-arid areas. The approach emphasised

developing and reviewing elements of the promotional process, as the aim was to develop and validate a local strategy for getting crop protection research into use, rather than adapt and validate the technology itself. Nevertheless technology adaptation and validation was an integral part of the process of training and participatory monitoring and evaluation at farm level.

The table below summarises who validated the main elements of the strategies, and how.

Table 6: Validation of output elements – Who and How

Activity	Who	How Validated
1. Reviewing existing mechanisms for updating demand for knowledge	Research, Public and NGO Extension Staff	Reflective workshops, analysis of historical records (minutes) of research response to demand identification mechanisms
2. Identifying potential demand for available research outputs	Research & Public and NGO Extension Staff & farmers	Workshops and focus group discussion to identifying potential demand for available and relevant “on the shelf” research outputs,
3. Identification of barriers to access to relevant research outputs and access preferences	Research, Public and NGO Extension Staff, CBOs, Farmers	Workshops, postal surveys and field consultations
4. Local collaborative production of technical training and information materials.	Research, Public and NGO Extension Staff	Training workshops and through participatory M&E of uptake and impact of technical training at field level.
5. Testing of approaches for improving extension service provider access to relevant research outputs	Research and Extension specialists	Postal feedback questionnaire, key informant interviews, training evaluation.
6. Evaluation of “best bet” methods for delivery of research outputs through alternative uptake pathways to farmers	Research, Public and NGO Extension Staff, CBOs, Farmers	Participatory and conventional M&E tools at field level, peer review in reflective practitioner workshops.
7. Feedback on the performance of research outputs and identification of further knowledge requirements	Research, Public extension and NGO Staff	Participatory and conventional M&E tools at field level,
8. Sourcing of research knowledge to address demand (link to 4-7 above)	Research, Public extension & NGO Specialists	Networking mainly,

Local experts from national research and extension organisations assessed the content quality of technical information and training materials, based on knowledge that had been locally validated. Training of trainer

sessions with feedback from field extension staff were used to further refine training materials. “New” research knowledge delivered was validated by farmers through their farming practice, assessing its efficacy, benefits and costs. Training and information content varied at the district, village, and farmer group level according to need. The programme aimed to be responsive in the context of reforming (decentralized in Tanzania and pluralistic in Kenya) agricultural extension models. Choice was provided by developing a range of materials for frontline service providers and farmers to select from, and by responding to emerging demands using available capacity.

Farmers involved represented a cross-section of gender, age and wealth groups. For example in Central Tanzania farmer validation was primarily by 35 farmer groups with a total membership of 390 members, 43% of whom were women. These farmer groups included people from different wealth categories, but had higher proportion of relatively wealthy farmers than in the wider community. In 5 sampled villages, at least 60% of respondents reported increased yield/ reduced crop loss and/or longer shelf life of stored products.

(548 words)

11. **Where and when** have the output(s) been validated?

Please indicate the places(s) and country(ies), any particular social group targeted and also indicate in which production system and farming system, using the options provided in questions 7 and 8 respectively, above (**max 300 words**).

The promotional and communication strategies were validated in seven pilot districts in less-favour areas of Kenya and Tanzania as follows; Western Kenya (Homa Bay and Rachuonya Districts), Eastern Kenya (Mwingi, Kitui>Makueni Districts); Central Tanzania (Dodoma Rural, Singida Rural and Kongwa Districts). A factor in selecting districts was their strategic position vis a vis national initiatives on agricultural service reform programmes (see Section 15).

The process of developing and evaluating promotional strategies for less favoured semi-arid areas began in Nov 2003 and ended in January 2006. More specific details are set out in the table below.

Table 7: Output elements – Where and When Validated

Activity	Where	When
1. Reviewing existing mechanisms for updating demand	E and W Kenya	2003-04
2. Identifying potential demand	E and W Kenya and Central Tanzania	2003-04
3. Identification of barriers to access to relevant research outputs and access preferences	E and W Kenya and Central Tanzania	2003-04
4. Local collaborative production of technical training and information materials.	E and W Kenya and Central Tanzania	2004-05

5. Testing of approaches for improving extension service provider access to relevant research outputs	E and W Kenya and Central Tanzania	2003-04
6. Evaluation of “best bet” methods for delivery of research outputs through alternative uptake pathways to farmers	E and W Kenya and Central Tanzania	2004-05
7. Feedback on the performance of research outputs and identification of further knowledge requirements (link to 1 above)	E and W Kenya and Central Tanzania	2004-05
8. Sourcing of research knowledge to address demand (link to 4-7 above)	E and W Kenya and Central Tanzania	2004-05

Current Situation

C. Current situation

12. **How and by whom** are the outputs currently being used? Please give a brief description (**max. 250 words**).

R8428 and R8349 produced two main types of outputs:-

I. Local strategies (including approaches and methodologies) for getting research into use in the less favoured areas, reaching the many poor households beyond the reach of mainstream public extension services,

II. “technical” information and training materials for semi-arid areas – with the main focus on locally validated crop protection and post-harvest technologies for semi-arid areas,

Both outputs required capacity building with the stakeholders involved and the development of monitoring and evaluation frameworks through which to assess the performance of uptake pathways, methodologies and technologies.

The main stakeholders involved in these projects (see Table 8) have used the experience and knowledge gained within their respective occupational settings – which range from using the key lessons in ongoing policy formulation and implementation, through extension service planning and implementation, through to practical application in dryland and small-holder irrigated farming in less favoured areas in the seven pilot districts.

The tables below summarise how and by who these two types of outputs are being used.

Table 8: Use of Strategy approaches and methods – How and Who

Local Strategies – methodologies and approaches	
How?	Who?
<u>Demand identification mechanisms:</u> Reviews of performance are being used to improve the functioning of local stakeholder research advisory committees. Decentralised participatory M&E systems initiated to provide information on demand are being improved:	Local research managers and research-extension liaison officers and other stakeholders represented. District planning and M&E officers extension staff and communities involved in PM&E
<u>Information Access – preferences & barriers</u> Results from surveys and consultations are being used to shape planning of local extension and researcher involvement in training of extension.	Public and NGO managers of extension and extension specialists and research staff involved in providing training to extension providers.
<u>Processes for local production of information & training</u> The processes developed are being applied to new situations and opportunities where possible using the skills acquired.	Research and extension staff with interest in training and communication officers.
<u>Cost-effective dissemination methods</u> The methods identified as being more cost-effective are being used on an ongoing basis.	The main extension providers (public sector and NGO).
<u>Market studies</u> Market Studies for onions and sorghum are being shared with relevant agencies expressing an interest – mainly area development projects and extension.	Research and communication staff involved in the study.
<u>Frameworks and Methods for monitoring and evaluation</u> The general principles learned are being applied to new situations and challenges.	District planning officers, extension managers and specialists, field extension agencies, research staff.

Table 9: Use of Strategy Crop Protection Materials – How and Who

Local Crop Protection Materials – information, training, products	
How?	Who?

<p><u>Information materials – brochures, catalogues, posters, videos, radio programmes:</u> The materials produced locally are available to the extension service providers and continue to function as a means of raising awareness of technical options available. They also generate requests for further information and/or training and are being used in demand identification and extension programme formulation relating to crop protection.</p>	<p>Extension service providers (public and NGO/private), including those from other areas and countries.</p>
<p><u>Training manuals</u> The training manuals produced are being used to provide training of trainers and as reference documents for ongoing training of farmers by front line extension agents.</p>	<p>Research and extension staff involved in training, at various levels.</p>
<p><u>Products</u> Seed of pest/disease tolerant varieties introduced (sorghum (see R7564 dossier), tomatoes, groundnuts, cassava) are being retained and bulked up for more widespread distribution.</p>	<p>Mainly farmers, NGOs. and district councils .</p>

13. *Where* are the outputs currently being used? As with Question 11 please indicate place(s) and countries where the outputs are being used (**max. 250 words**).

The seven districts targeted were in the less favoured semi-arid areas of Western Kenya (Homa Bay and Rachuounya) Eastern Kenya (Makueni and Mwingi) and Central Tanzania (Dodoma, Singida and Kongwa).

The promotional/communication strategies and the associated technical materials validated in seven pilot districts of Kenya and Tanzania are, according to current information, still being used by the extension providers and farmers who were trained. In Kenya transfers of staff have resulted in some of the approaches and technical material being applied in additional districts (see Q16).

The pilot districts were selected in relation to their strategic position vis a vis national initiatives on agricultural service reform in Tanzania and Kenya.

In Kenya, the Kenya Agricultural Productivity Project (KAPP) selected pilot districts to initiate extension reform after the start of R8349. With continuation under R8428 two of the four districts selected by the project were also pilot districts for KAPP. This provided a potential opportunity to develop an ongoing learning platform with respect to the promotional process in less favoured areas. Since the project ended, as part of the reform of extension, the extension staff involved have been moved to new districts. This provides an opportunity for applying the learning on promotional and dissemination strategies in their new geographical situations.

In Tanzania, the Agricultural Sector Development Programme (ASDP) is the umbrella programme for agriculture. A key programme under this, the Agricultural Sector Support Programme is reported to have been officially

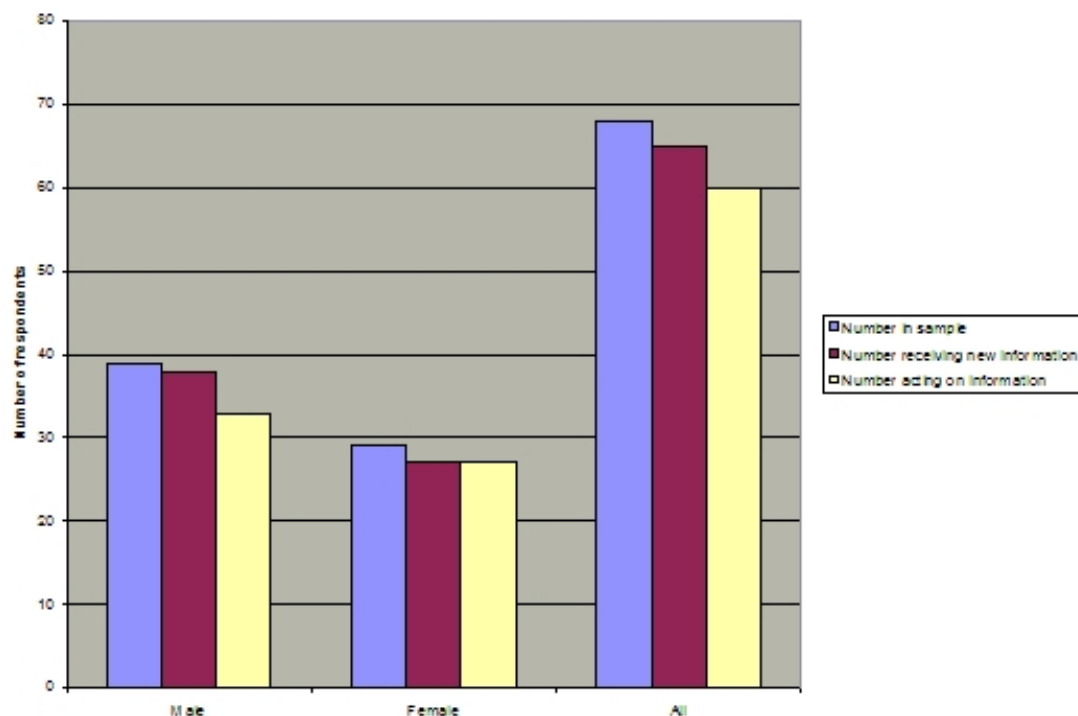
signed off in August 2006, but is still not operational. NRI has been invited to review the World Bank PADEP (Participatory Agricultural Development Project) project which could be a valuable entry point to feed in outputs from this project.

14. What is the scale of current use? Indicating how quickly use was established and whether usage is still spreading (max 250 words).

Within the selected districts, key stakeholders, including research and communication service providers with a mandate to cover these districts, were involved. The process of developing and delivering a promotion/communication strategy took about 18 months, which included a full season for delivery of knowledge, skills and products to farmers and an assessment of the performance of these products and the delivery methods. A further 9 months was required to repeat the validation process, further develop the methods and materials, and consolidate the lesson learning process. With the experience gained from this initiative, the process could probably be shortened in the event of scaling up to similar contexts elsewhere, to between 18-24 months.

To enable an assessment of the efficacy of a range of favoured and innovative pathways and methods for reaching farmers, within districts specific communities and/or farmer groups were involved through ongoing agricultural extension programmes. Assessment of the uptake of knowledge by farmers using the favoured pathways and methods was undertaken through a follow up surveys in a sample of communities. In Central Tanzania, results indicate that the level of farmer uptake, defined as “acting on the information provided” was very high, both for men and for women members of farmer groups.

Chart 1: Number of Male and Female respondents receiving and acting on new information- Central Tanzania



In terms of the spread of knowledge through farmer to farmer mechanisms, follow-up surveys suggested that the majority of farmer group members receiving training had shared what they learned with other farmers. Men tended to share their information with higher numbers of other farmers than women, while a higher proportion of women (93%) than men (84%) who received information reporting sharing it with others.

Table 10: Sharing of new information by farmer group members with others- Central Tanzania

	Male	Female	All
Number in sample	39	29	68
Number receiving new information	38	27	65
Number sharing information	32	25	57
Total recipients	1023	363	1386
Mean number of recipients/ farmer group member	32	15	24
SE of the mean	10.7	4.1	6.4

Source: Follow-up survey in Central Zone Tanzania September 2005

15. In your experience what programmes, platforms, policy, institutional structures exist that have assisted with the promotion and/or adoption of the output(s) proposed here and in terms of capacity strengthening what do you see as the key facts of success? (**max 350 words**).

In both Kenya and Tanzania, the project focus was at the next level below the national capital, working with organisations and stakeholders already engaged in agricultural service provision in districts. This was to optimise the scope for sustainability and scaling out by replicating the approaches developed building on local capacity in the process. In addition, dialogue was fostered with key national programmes and also between three site core implementation teams, providing a regional forum for sharing of experiences.

The Kenya Agricultural Productivity Project (KAPP) had identified districts to pilot extension reform options, and two of these were also targeted by the project to providing local learning platforms that would link to national programmes. The Agricultural Sector Development Programme (ASDP) in Tanzania was due to start in Sept 05. The project team engaged with the ASDP design team on the scope for using lessons regarding enhancing farmer/service provider interaction at district level and the delivery of knowledge to service providers.

Table 11: Success Factors at Key levels of Capacity Building

LEVEL	Key Capacity building success factors
Programmes,	
Research: DFID (CPP, CPHP), National Adaptive Research Mandates	Programme managers open to innovative ideas and action research approaches and flexible approaches
Extension: Programmes (NALEP) and NGO Extension programmes.	Meso/District level staff from public extension and NGOs open to working with new approaches.
Major Agricultural Service Reform: KAPP, ASDP	Open to sharing ideas, looking for “solutions”.
Platforms	

<u>Local/ Meso Level</u> In each site different mix of local stakeholders focused on a clear purpose and influenced by prior history of collaboration	Willingness to engage in an action learning process. Using farmers and extension staff as knowledge resources, Participatory M&E, back-stopping service, easy to understand and appropriate technologies and training materials, timely flow of funds and resources,
<u>National Level</u> Tanzania –ASDP? Kenya – KAPP, NALEP & SRA	Major national platforms for service reform at formative stage during project. Personal engagement with managers provided opportunities for sharing ideas to shape policy implementation, including better practice in research promotion, extension methods and evaluation of these.
<u>Regional</u> The project became a temporary regional platform.	Meetings of core stakeholder team members from the three project sites were highly valued experience sharing and capacity building events.
National Policy	
Agricultural Service Reform Policies and Programmes. Decentralization and liberalisation of service provision	See comments above for national platforms. The main opportunity is in providing practical ideas for improving policy implementation.
Institutional structures	
Formal Organisations, formal agreements of collaboration and personal alliances between individuals	These link back to the levels of platforms above. Communications and development of trust are key in terms of building capacity for working in a collaborative mode. ICTs eg mobile phones, internet have a key role to play.

Environmental Impact

H. Environmental impact

24. What are the direct and indirect environmental benefits related to the output(s) and their outcome(s)? (max 300 words)

This could include direct benefits from the application of the technology or policy action with local governments or multinational agencies to create environmentally sound policies or programmes. Any supporting and appropriate evidence can be provided in the form of an annex.

There are no obvious direct environmental immediate benefits from the proposed scaling up programme. The

assumed indirect benefit is the promotion of knowledge and technologies that are locally validated and have been assessed for potential negative environmental impact. The approach is particularly suited to managing knowledge intensive information and products that require minimal external inputs. The technologies promoted in R8428 and R8349 were mainly improvements in crop and post harvest pest management which would encourage natural resource conservation, reduced reliance on purchased chemical inputs and posed minimal risk to contamination of local water and food chains and minimise risk of pests developing resistance.

25. Are there any adverse environmental impacts related to the output(s) and their outcome(s)? (max 100 words)

There are no obvious adverse environmental effects from the proposed scaling up programme. The approach is particularly suited to managing knowledge and technologies that are knowledge intensive and require minimal external inputs, and therefore are likely to have minor environmental impact in the shorter term. There is a minor risk is that the more effective technologies will lead to the outcome of productivity increases, translating into improved food security which will in turn encourage more people to stay in less favoured areas, putting increased population pressure of environmental resources.

26. Do the outputs increase the capacity of poor people to cope with the effects of climate change, reduce the risks of natural disasters and increase their resilience? (max 200 words)

In this regard, the main strength of the approach is that local stakeholders, with in-depth understanding of local conditions, including climatic trends and the effects extreme events, are involved in selecting the knowledge and technologies to be promoted. The methods used for training extension providers and farmers are knowledge-based and use experiential learning, which is empowering and enables the users to weigh issues such as risks posed by climate change and extreme events as they relate to investments in particular farming enterprises. Many of the less-favoured areas are arid and semi-arid, and more likely to be negatively impact by climate change. The process of developing a communication strategy, and technology options for promotion, provide a solid foundation for collective problem solving by local stakeholders which can also address challenges posed by climate change.